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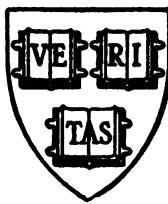
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A PLAN FOR A MORE EFFECTIVE FEDERAL AND STATE HEALTH ADMINISTRATION

By

FREDERICK L. HOFFMAN, LL. D.

Third Vice President and Statistician The Prudential Insurance Company of America, Director American Public Health Association, Director and Member Executive Committee National Tuberculosis Association, Trustee and Member Executive Committee American Society for the Control of Cancer, Member of Executive Committee and Chairman Committee on Statistics National Committee on Malaria, Chairman Committee on Race in Relation to Disease (Civilian Records) National Research Council, Third Vice President National Safety Council, etc.

A CONSOLIDATION OF PAPERS

read before the

Commonwealth Club of San Francisco, October, 1918
and the American Public
Health Association, December, 1918

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TO

THE AMERICAN PUBLIC HEALTH
ASSOCIATION

IN SINCERE APPRECIATION
OF ITS EFFORTS TO
IMPROVE THE HEALTH
AND LONGEVITY OF THE
AMERICAN PEOPLE

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| Whooping Cough | Measles | Accidents |
| Infant Mortality | Pauper Burials | Infantile Paralysis |

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A PLAN FOR A MORE EFFECTIVE FEDERAL AND STATE HEALTH ADMINISTRATION

INTRODUCTION

It is not only desirable but an essential prerequisite of social progress that inquiry shall be made from time to time concerning the present value and the further perfection of existing methods or instrumentalities ministering to human welfare and human wants. Health is so obviously of the first importance that its protection and more or less effective conservation have from time immemorial been made at least a matter of individual, if not collective, concern. Most of the so-called health legislation from the earliest times to the present day, however, has been concerned with the correction of ascertained sanitary or related imperfections, rather than with anticipatory action having for its purpose the prevention of disease and premature death. Much of what is called preventive medicine, even at the present time, is in the direction of prevention of further damage and harm rather than of a character deliberately designed to preclude the occurrence or inception of dangers which so frequently, and practically continuously, threaten the individual and collective welfare in what, for want of a better term, is comprehended as the vast field of public hygiene. The fact must not be overlooked that in its origin, every modern public health organization rests primarily upon the principle of quarantine as applied in the case of recognized infectious or contagious diseases, and the, if necessary, drastic exercise of the police powers on the part of the Government, the States, and the civil subdivisions thereof.

THE QUARANTINE BASIS OF PUBLIC HEALTH

Probably the earliest quarantine legislation in this country was adopted by the General Court of Massachusetts in 1647 or 1648, to prevent the introduction of the plague (probably yellow fever) "which was then devastating the West Indies." Unquestionably, and in a large measure, effective quarantine regulations, whether maritime or local, constitute, however, but a fraction of modern health legislation, which has gradually been extended from communities to persons and which

now comprehends every conceivable sphere or function of individual and social life. Even an enumeration of the subject-matter of modern public health activities would unduly enlarge upon the present discussion, which is chiefly concerned with future possibilities rather than with past achievements. What is to-day understood as health conservation concerns largely such anticipatory action as by general consent seems feasible of enforcement, if not in the form of specific statutory requirement, at least in the nature of improved personal conduct in matters concerning both personal and public hygiene. In the broadest sense, therefore, modern health activities have become largely educational, with a view of securing on the part of each and all concerned a better understanding of the principles which govern in the attainment of better health and greater freedom from disease, a more perfect adaptation of the human organism to its environment and a substantial prolongation of life. The acceptance of this principle has enormously increased the sphere and the function of public health administration and made perfectly obvious the inadequacy of existing methods, whether Federal, State or municipal, to effectively serve the true interests of all the people. What in former years, when the nature of epidemic diseases was not understood, was a necessary exercise of the police powers has in modern times become of rather secondary importance. All that is generally comprehended under so-called sanitary legislation, such as the burial of the dead, the control of nuisances, the protection of water supplies, sewage, drainage, etc., is no longer within the realm of debatable public consideration, but is accepted as a paramount necessity of and the rightful prerequisite to a wholesome community life. Even though the principle has not as yet been generally accepted that failure in these matters on the part of the responsible authorities should constitute an indictable offense, it is nevertheless a safe conclusion that such a view is gaining ground, and a number of court decisions seem to settle the question that every community is in duty bound to furnish pure water, to abate dangerous nuisances, to prevent the further spread of communicable diseases, etc.* But practically all that concerns the health of the individual and his

*The early history of quarantine as a basis for a public health organization is unquestionably of much practical interest, even at the present time. One of the most instructive papers on the subject is a discourse by Richard Mead, M. D., "Concerning Pestilential Contagion, and the Methods to be Used to Prevent It," an eighth edition of which was published, London, 1722. Referring to the dangers of disease spread by means of infection through the medium of commercial intercourse, Mead took occasion to point out that "By the preceding cause [goods from infected places] the plague may be spread, from person to person, from house to house, or perhaps from town to town; but this carries it into the remotest regions. From hence the trading parts of Europe have their principal apprehensions, and universally have recourse to quarantines for their security."

In 1834 there was published in Boston an essay on "Quarantine and Other Sanitary Systems," by Chas. Caldwell, M. D., in which the question was raised as to whether the

or her own physical well-being, is still considered primarily and essentially a matter of personal concern only.

THE STATE IN RELATION TO INDIVIDUAL AND PHYSICAL WELL-BEING

It is of the utmost importance that this distinction should be kept clearly in mind in all discussions of a broader national and state health policy. It may then be said that instead of the individual of to-day being concerned chiefly in the efficient performance of an important but limited state function regarding himself or his family, the modern conception is rather the reverse in that the government or the state is profoundly more interested in the most successful adaptation of each and every individual to his or her environment, be that what it may. Once that this as yet but very imperfectly conceived principle is generally approved, the urgency of a complete remodeling of our Federal and State health organizations becomes self-evident. In answer to the argument that such a change would be revolutionary and opposed to traditional conceptions of the freedom of the person, the reply is that, quite to the contrary, a much lesser degree of public and private interference will become necessary, once that the required coöperation of *all* the people in the furtherance of collective health measures is secured. As has been well said by one of the very foremost American authorities on the theory of the state and in defense of decidedly higher conceptions of human society, properly conceived as an incorporated association, inclusive of all the persons composing it,

"It has been found out by experience that *the whole*, by its superior organization, can do some things to which individuals are unequal"; and furthermore, "Will it be said that by such state action individuals are not alike benefited, and so there is a sort of injustice in it? The ready answer

restrictions imposed upon vessels entering the port of Boston, "called Quarantine Laws," are really useful, and if so, in what cases they should be applied. The author frankly concedes that he is no friend of quarantine laws, probably in a large measure because of the irrational and arbitrary manner in which quarantine regulations were enforced at that time, to the serious detriment of commerce and foreign intercourse. According to Caldwell, the practice of quarantine, though of ancient date, had its practical origin, at least in the modern sense, in a papal decree issued at the time of the Council of Trent by Pope Paul III (A. D. 1545). The author's forecast, that quarantine "in time to come will be known only as a matter of history and will be quoted by posterity as evidence of the error and superstition which had once held dominion over the minds of their forefathers," has not materialized during the many intervening years. Quarantine systems, however, have been substantially modified, and since 1850 the subject has been considered at eleven international conferences, the latest of which was held in Paris in 1903, and a plan was ratified in 1907 and is now in active operation in twenty-three countries, including the United States.

In a special report to the Parliament of the Commonwealth of Australia by Dr. W. Perrin Norris, issued in 1912, on "Quarantine Requirements," based upon an international survey, the statement is made that "The quarantine organization for the prevention of the introduction into the United States and its dependencies of disease from oversea and its spread from State to State must, in my opinion, be admitted to be the best conceived and most complete in the world. It exemplifies the most logical applications of the principles of quarantine."

is that this is unavoidable, and that no one of these modes of action ought to pertain to society and the state which on the whole does not contribute to the common good. When courts are instituted for the redress of wrongs, multitudes go through the world who may never have been wronged, and yet were there no courts they might have been wronged daily. Public roads are of no direct good to those who never travel. Great breakwaters and a system of lighthouses help shippers only, in the first instance, and men complain of taxes for such constructions, forgetting that, apart from humanity aiming at the safety of sailors, the prices of imports would be affected by the greater risks of vessels."*

Substitute in these illustrations the health of the community as represented by the wide range in the physical well-being of the vast multitude which compose it, any one or all of which are affected to a varying degree by the measures adopted as likely to benefit or improve it, and the parallel is reasonably exact. In other words, the health of the individual, his physical well-being, his strength of disease resistance, his immunity to infectious or contagious diseases, his successful adaptation to ever-changing environmental conditions, etc., should be made the primary concern of the future state, instead of being a matter of mere incidental consideration, as is practically the case at the present time.

NEW PRINCIPLES OF HEALTH ADMINISTRATION

Under such a conception the modern health department would assume the functions of a general health *administration* concerned with *all* the matters which affect the health and physical welfare of the people, and not merely a function sustained almost exclusively by the police powers of the Federal Government or the State and limited in its actual effective operation to a comparatively small, however supremely important, group of activities. No plan as yet proposed by any one concerned with these matters rests upon such a new principle, or set of principles, but, one and all, the proposals for changes or reforms are merely a modification of a thoroughly restricted theory of health control, conditioned chiefly by the principle of public quarantine and the control of the person under the police powers when found to be afflicted with some contagious or infectious disease and the control of the environment in matters of obvious public nuisances menacing the health of the people in more or less clearly perceived directions.

Considering that all organized Federal and State health activities are of comparatively recent date, that the earlier boards of health were chiefly concerned with the temporary control of great epidemics, that even so advanced a State as Massachusetts has had a State board of

* "Political Science or The State" by Theodore D. Woolsey, New York City, 1877, vol. 1, p. 215.

health only since 1869, reorganized in 1886, and that our present Federal public health service dates only from 1902, when broader health activities were granted in the act excluding immigrants affected with loathsome or dangerous contagious disease, and subjecting such immigrants to medical examination, the progress which has been made is profoundly gratifying, however regrettable it may be that a more thoroughly worked out system, resting upon *new principles* of personal and public hygiene, should not long since have come into existence. Yet it has been properly pointed out with reference to the first State board of health of Massachusetts that the same was commanded to take "cognizance of the interests of health and life," and that it was only made a secondary function of the board to study the causes of disease and death. As stated by Prof. Whipple, in his work on "State Sanitation," "The order in which these subjects are named is not without significance. Health is a great issue, and health is something more than the absence of disease. Health demands not only freedom from disease but a clean environment, comfortable and enjoyable conditions of life, suitable food, satisfactory provisions for work and play and for the raising of children," but health is infinitely more than this. Prof. Whipple himself was under the influence of the earlier conception that the functions of a State department of health are primarily concerned, as of course at the time they had to be, with the control of the environment in its relation to the present. The view, however, to be emphasized, and as far as practicable to be supported by the required evidence, maintains that the primary duty of the modern state is to concern itself with the welfare of the person and the successful adaptation of each to his environment, be that what it may; for the wide variations in environmental conditions make absolute uniformity in law and legislation and in rules and regulations on the basis of so-called "standards" frequently undesirable. It has been said in this connection, though, of course, subject to qualification, that, as regards the health of the individual, "The question of muscular strength, of girth of chest, of size, has naught to do with health, the sole test being the adaptability of the body to continue under the circumstances of life in which it is placed—*i. e.*, under its environment." Just because it is so easy and convenient to live by a good rule rather than by trained intelligence, in the light of a thorough understanding of bodily functions, their limitations, their possible impairment, exceptional strength or weakness in individual cases, existence by a hard and fast rule is as likely to prove disastrous as, conversely, it is by disregard of common sense requirements applicable to one and all. For, as

further said by Dr. A. E. Bridger, in his treatise on "Man and His Maladies or the Way to Health."

"It follows as a necessary corollary that there can be no general arbitrary standards such as our one-idea men are so fond of assuming, no one perfect diet, no one perfect mode of life, no one fixed amount of ozone in the air, which would, had man but the grace to follow their wise counsels, regenerate mankind, and make all men healthy, wealthy and wise; and that no one fixed combination of these would, or could, ever suffice to that end; and this simply because, as no two men coincide precisely in construction and in the amount, variety, and distribution of forces within the body, no one set of conditions can possibly be adaptable to the whole mass of humanity."

PHYSICAL ANTHROPOLOGY AND HEALTH PROGRESS

There is a profound truth contained in the foregoing sentence which has, broadly speaking, been ignored in most of the educational efforts carried on during recent years in public health activities, in which, in theory, an average man or an average human type is assumed, although, as a matter of fact, such a concept is merely statistical or philosophical, but never real. *Man* defies analysis and subjection to the rigid principles deduced from a study of collective phenomena. After all, every man or woman is, first and last, an individual, and though by means of statistical methods certain average types are clearly to be differentiated from other average types, yet nevertheless there is nearly always a major portion of similarity, at the one extreme, and a major portion of pronounced variability, at the other. In the words of Prof. Alfred C. Haddon, in the introduction to his admirable treatise on "The Study of Man,"

"It seems strange that man should study everything in heaven and earth and largely neglect the study of himself, yet this is what has virtually happened. Anthropology, the study of man, is the youngest of the sciences, but who will say that it is the least important? We may, perhaps, find one reason for this neglect in the peculiar complexity of the subject and the difficulty there is in approaching it from a dispassionate point of view; there are so many preconceived opinions which have to be removed, and this is always a thankless task. Even now the scope and significance of anthropology have scarcely been recognized."

The health service of the future, I am fully convinced, will rest more upon the teachings and the practical conclusions of anthropology, and particularly physical anthropology, as chiefly concerned with the ascertainment of the normal human physique, normal physical standards of bodily proportions and growth, and observed departures therefrom, especially during the early years of life. In brief, I believe that a rational health administration, concerned primarily with the health

of the individual, must have its beginnings in a thoroughly well-worked-out department of physical anthropology, devoted to the eminently practical task of supervising the growth and development of the nation's childhood, continued through the period of early and late adolescence, inclusive of the entrance into industry or whatsoever vocations or pursuits or activities may be followed prior to the attainment of complete maturity.*

In 1904 a classical report was made by an exceedingly able departmental committee appointed by the British Government to inquire into the subject of physical deterioration. The recommendations made by that committee, however, were contemptuously disregarded! Had they been followed, there would be less anxiety to-day concerning the future physical well-being of the people of the United Kingdom. The conclusions advanced by that committee are applicable to every civilized and more or less industrially developed country. Among the principal recommendations of the committee were (1) the suggestion for an anthropometric survey, which should have for its object the periodic taking of measurements of children and young persons in schools and factories, (2) a register of sickness not confined to infectious diseases, and (3) an advisory council "representing the Department of State, within whose province questions touching the physical well-being of the people fall, with the addition of members nominated by the medical corporations and others whose duty it would be not only to receive and apply the information derived from the anthropometric survey, and the register of sickness, but also to advise the Government on all legislative and administrative points concerning public health in respect of which state interference might be expedient."

As a result of the war the subject of anthropology and national health is, however, receiving much more qualified consideration in England at present than at any time in the past, according to an article in the London *Lancet* of October 19, 1918:

"The first of a series of lectures on public health problems under war and after war conditions was delivered at the Royal Institute of Public Health on October 9, 1918, by Prof. Arthur Keith, F.R.S., his subject being Anthropometry and National Health. The chair was occupied by Major Leonard Darwin. Prof. Keith said he did not believe the Prime Minister had done any greater service than when he drew attention in his speech at Manchester, on September 12th, to the fact that if the health of the people had been looked after

*Some exceptionally valuable data on physical growth and development are included in the first three chapters of Prof. G. Stanley Hall's treatise on "Adolescence," New York, 1905.

we should have been able to put into the fighting ranks at least a million more men, and the war would by that date have ended triumphantly. The first movement in this country to ascertain the physical condition of the people was made by a committee of the British Association in 1875, which in ten years took measurements of 80,000 men, women, and children. After the Boer war General Maurice (Sir Frederick Maurice's father) stated, in an article in the *Contemporary Review*, that out of every five men who presented themselves for acceptance as soldiers only two were found fit to bear arms. A surgeon-general of the time, after investigating the recruiting statistics for ten years, said they showed that of every 1,000 men who applied to become soldiers 400 had to be rejected. On the initiative of General Maurice the government appointed a departmental committee, which, after an eight months' inquiry, made a valuable report which recommended the setting up of machinery for investigation, but the report had been pigeon-holed. Conscription, however, had now placed us in possession of the figures in regard to the physical condition of the people. A population which deserved the term 'healthy' ought to yield the following per 1,000 men: 700 Grade I., 200 Grade II., 75 Grade III. (for sedentary work), and only 25 physically incapable. Yet a Midland manufacturing town produced only 200 Grade I., 250 Grade II., 450 Grade III., 100 Grade IV. And that was characteristic of many towns in the Midland and Northern counties of England and in the south of Scotland. Mr. Lloyd George's statement was found to be well within the mark. That was also true of the Premier's remark that the chief cause of the deterioration was in the home. Prof. Keith said he wanted to see a physical census of the people, and even after the setting up of a Ministry of National Health he would retain the Ministry of National Service, and he would have each county subdivided into areas, so that prevailing standards and ailments could be traced and investigated."

The most convincing illustration of the practical value of systematic physical examinations is the report of the Edinburgh Charity Organization Society on the physical condition of fourteen hundred school children in the city of Edinburgh, together with some account of their homes and surroundings. According to this inquiry the standard averages of the Anthropometric Committee of the British Association for the Advancement of Science were found materially deficient, in that it was "repeatedly noted by Dr. Chalmers and others that Scottish boys and girls are usually above the average height of their neighbors south of the border" and that, therefore, "it need not

cause surprise that country children and well-nourished town children exceed the standard height in a noticeable degree." In the same report attention is directed to the lesser heights of the children of certain schools, "many of whose chances of healthy growth are apparently spoiled for life before they begin to attend school, by bad conditions of the mother's life before and after the birth of the children."

Among other important investigations suggestive of the plan to be followed in this country is the report by Dr. W. Leslie McKenzie and Capt. A. Foster on a collection of statistics as to the physical condition of children attending the public schools, of the School Board of Glasgow, in which among other important conclusions, attention is directed to the extremely suggestive fact that "If we take all the children of ages from five to eighteen we find that the average weight of the one-room boy is 52.6 lbs.; of the two-room, 56.1 lbs.; of the three-room, 60.6 lbs., and of the four-room and over, 64.3 lbs. The respective heights are 46.6 in.; 48.1 in.; 50.0 in., and 51.3 in." For the girls, the corresponding figures were as follows: Weights, 51.1 lbs.; 54.8 lbs.; 59.4 lbs., and 65.5 lbs. The heights were 46.3 in.; 47.8 in.; 49.6 in., and 51.6 in."

Another suggestive contribution to this aspect of modern public health administration is the report of the Department of Health Instruction of New South Wales on the physical condition of children attending public schools in New South Wales, with special reference to height, weight and vision. In this report it is pointed out that in the first place there "were physical defects which interfered with the progress of the child's education, and in the second place, many children suffer from physical defects which escape the notice of parents until they pass a stage at which they can be easily remedied, while in the third place, there is a necessity for bringing promptly under control those complaints which break out in epidemic form among children." In other words, priority is given to physical over medical facts and the required first ascertainment of defects or deficiencies in physical growth and development.

In an admirable treatise, which as yet has received but superficial attention on the part of the medical profession and those engaged in public health administration, on "The Disorders of Post-Natal Growth and Development," by Hastings Gilford, F. R. C. S., it is said that a study of the subject in its wider aspects "must inevitably lead to the conclusion that most of the diseases to which we are subject are diseases of growth or of development and that by far the larger number of them do not begin until after birth." The required advance

in physical education, physical training and health conservation cannot make the rapid progress desired unless the course of procedure adopted is more in conformity to the facts and conclusions advanced by Hastings Gilford and others than is at present the case. All such extremely involved problems of child life as undergrowth or overgrowth, premature development or underdevelopment of sex, the disorders of growth of the skeleton, overgrowth of the thymus gland, the spleen and the lymphatic glands, etc., require for their possible correction and intelligent control a much better understanding of the more obscure facts of growth and development than prevails at the present time, even among members of the medical profession, otherwise well-informed in the several branches of medicine as a healing art.

Directing attention here to only a single illustration, such a work as the treatise on "Lateral Curvature of the Spine and Round Shoulders," by Robt. W. Lovett, M. D., illustrates the practical difficulties of really effective measures of treatment and control, in that it is said that the therapeutic measures employed in the past "have been on the whole largely empirical and have not been sufficiently correlated to its pathology and to the mechanism by which it is caused." The importance of research work in this unfortunately much neglected field was clearly brought to the attention of the public in 1916 during the nation-wide epidemic of infantile paralysis.*

STANDARDIZED METHODS OF PHYSICAL EXAMINATION

There can be no entirely effective Federal or State health administration which continues to ignore the physical facts of individual life and which does not concern itself with the conclusions derived from collective investigations concerning physical progress and physical well-being; yet, broadly speaking, in not even the most advanced civilized countries are efforts being made to first ascertain the true physical status of the population and the variations in health and growth from time to time, whether towards physical improvement

* In consequence of the epidemic the subject of infantile paralysis, however, received a large amount of scientific consideration, and among the reports which have thus far been forthcoming the following are deserving of special mention: Transactions of a Special Conference of State and Territorial Health Officers with the U. S. Public Health Service for the Consideration of the Prevention of the Spread of Poliomyelitis, Bulletin 83, U. S. Public Health Service, Washington, 1917; Report on the Epidemic of Poliomyelitis in New York, 1916, published under the direction of the Department of Health of New York City, 1917; Epidemiologic Studies of Poliomyelitis in New York City and Northeastern United States During the Year 1916, by Lavinder, Freeman and Frost, Bulletin 91, U. S. Public Health Service, 1918. An exceptionally interesting report from the local viewpoint is a monograph entitled "A Municipal Sanitary Crisis, or How New Rochelle Met the Poliomyelitis Epidemic of 1916." From the international point of view a report by Dr. R. Bruce Low appended to the annual report of the Medical Officer of the Local Government Board for 1915-16, London, 1917, is of special value on account of the wide range of data considered.

or physical deterioration, as the case may be. Furthermore, and still more lamentable, is the fact that in not even the most advanced countries are such fragmentary data as exist intelligently utilized, but, quite to the contrary, are contemptuously disregarded as needless to the higher requirements of an intelligent policy of government resting upon the declared principle of general welfare.*

A beginning has fortunately been made in this country through the United States Children's Bureau to initiate a plan for the systematic measurement of children of pre-school age, subsequently, no doubt, to be followed by the introduction of systematic measurements of children during the teaching period from the primary grade to the university. It is true, of course, that vast numbers of children are being measured in school or out, and that equally vast numbers of measurements are made of young persons in industry, in the military service, etc. The lamentable fact, however, is that these measurements are, in the first place, crudely made; in the second, the prevailing standards of normal height and weight, chest expansion, etc., are seriously deficient in scientific accuracy; and in the third place, the ascertained deficiencies, or departures from the normal, are not made a matter of serious concern on the part of the school or the parents, or the medical profession, or all combined.† Now, a modern state, resting its claims for preëminence upon a thoroughly healthy population, can be such only if standards of physical health and well-being are correctly ascertained and then properly applied to the correction of errors or deficiencies in growth or development in the very earliest stage of cognizable departures from the normal. It serves but a very limited, if any, purpose to ascertain such errors after they have become thoroughly established and possibly been incorporated in the mature development of the body. What is here said of the simple requirements of physical anthropology applies, of course, with much greater force to the broader needs of physical examinations. By physical examination is here meant an amplified medical examination, which

* For additional observations of my own on this important question see article on "Some Vital Statistics of Children of School Age," the *School Review*, December, 1913, see also my address on the "Physical Care of Children," *Medical Review of Reviews*, April, 1916.

† Thus, for illustration, physical measurements are required of the pupils of all Indian Schools, not only at entrance or at the beginning of the term, but monthly throughout the school year. The instructions are that "each pupil must be accurately weighed at least once each month and the weight recorded on the form provided for that purpose." But the instructions are indefinite as regards the allowance to be made for clothing and there is no requirement as to observations on the changes in stature. The importance of weight as evidence of physical well-being is, of course, relative, varying with the height and age. The absolute weight is of much less importance than the relative weight, or weight in relation to stature. As far as known the statistics collected are not utilized for scientific purposes in a permanent or collective form. If subjected to critical analysis with a due regard to the tribal affiliations and degree of race intermixture such statistics, even though limited to height and weight, would make a most valuable addition to physical anthropology.

can not be made properly by the physical examiner, governed too exclusively by the special requirements of physical anthropology. Unless, however, physicians are trained in making physical examinations they are just as likely to arrive at erroneous conclusions, most of all when, as is usually the case, the physical examination is made in a perfunctory manner and the judgment is guided by more or less misleading standards, as when medical conclusions are arrived at by physical anthropologists.* All such examinations, as, for illustration, those for defects of vision, hearing, dentition, spinal curvature, etc., require extreme care if latent tendencies towards future serious defects and possible deformities are to be disclosed. There is, therefore, the utmost urgency that this aspect of modern health administration should receive prior consideration if the future health of the nation is to rest upon a strictly scientific as well as thoroughly practical foundation.

The questions involved in this suggestion have received the serious attention of the Committee on Race in Relation to Disease (Civilian Records) of the National Research Council. That committee has recommended a standardized form of physical measurements and medical examination, with a due regard to the racial antecedents of the person examined, chiefly, for the time being, limited to persons employed in industrial establishments. The committee clearly realized the importance of accuracy and thoroughness in the physical examination of adult applicants for employment, a sound physique being a prerequisite of the best possible results in industrial establishments. In other words, the same conclusions which apply to infants and

* The Standard Child Labor Bill as recently introduced with slight modifications in West Virginia provides for "a certificate signed by a medical inspector of schools or public health officer stating that the child has been examined by him and in his opinion has reached the normal development of a child of its age, and is in sound health and physically able to be employed in the occupation in which the child intends to engage." With reference to proof of age a certificate is required, "signed by the public health physician or a public school physician, specifying what in the opinion of such physician is the *physical age* of the child," and that "such certificate shall show the height and weight of the child and other facts concerning its physical development revealed by examination and upon which the opinion of the physician as to the physical age of the child is based. In determining such physical age the physician shall require that the school record or the school census record showing the child's age be submitted as supplementary evidence." But as a matter of fact there are not, strictly speaking, as yet any trustworthy physical standards of age, growth or vocational fitness. Such standards can be developed only out of the data which are now being collected, but which will be seriously misleading unless the tabulation and analysis and resulting averages are with a due regard to the racial antecedents of the child, or, more precisely, the race of the father or the mother or the races of both.

It may be suggested here that the term *nationality* in investigations of this kind is grossly misleading and scientifically of no value. The *nationality* of a naturalized Italian is American; the *nativity* of an Italian, irrespective of citizenship, is Italian; the *race* of an Italian is with few exceptions the same as the nativity, but the race of an American-born child of Italian parentage is Italian, and not American. The most difficult complications arise in the correct racial differentiation of the immigrant stock from certain central European countries, where nativity and race are frequently confused. The term *nationality* should never be used in investigations of this kind.

children of pre-school age, which are recognized by the Children's Bureau as applicable to children of school age and post-school age and enforced in many schools, public and private, and made mandatory in some by the use of school inspectors, etc., are equally applicable to vocational training and to vocational activity, but particularly so during the years of late adolescence or just before complete maturity has been attained. A national and local health administration, resting its beneficent activity upon such a basis, can not but achieve measurably greater results than have been secured under the decidedly more restricted functions of public health and state medicine followed at the present time.* (See Appendix A.)

THE PRACTICAL VALUE OF SICKNESS STATISTICS

The second prerequisite of a rational and effective public health administration is *the accurate and complete registration of all serious illnesses*, whether in private practice or in institutions under medical supervision and control. What has properly been called the "wasted records of disease" constitute, by their non-use at the present time, an indictment of the public health authorities and the medical profession as indifferent to the most vital facts which concern national health and well-being. The conclusions drawn from mortality statistics are naturally of a very high order of intrinsic value, but after all they serve rather historical or retrospective purposes, and quite frequently the lessons drawn therefrom are no longer applicable to a possibly completely changed state of affairs. The statistics of communicable or transmissible diseases are frequently limited chiefly to the acute infectious diseases of infancy, as to which the enforcement of drastic quarantine regulations is least difficult. The reporting of such a disease as tuberculosis is still far from having attained even a reasonable degree of approximate accuracy, so that for practical purposes most of the data are useless and misleading. That much can be done in the direction of broadening the plan and scope of such disease reporting has been made evident by the gratifying results in the State of Mississippi, where trustworthy returns are now being made by over 90 per cent. of the physicians throughout the State. The reluctance on the part of the medical profession and the unwillingness frequently shown to completely fill out certificates of communicable diseases and to promptly forward the required information to the central office of

*In a collection of papers on Army Anthropometry and Medical Rejection Statistics (Newark, N. J., 1918, Prudential Press), I have brought together a considerable amount of useful information from American and foreign sources, not generally accessible. The address emphasizes the urgency of much more rigid conformity to strictly scientific requirements, if results of really practical and lasting value are to be secured.

the State or local board of health are but further evidence of a failure on the part of the medical profession to clearly realize its public status and semi-official relations to the government. As perhaps the most conspicuous illustration of unwillingness or indifference in this respect mention may be made of the failure of a large number of physicians in practice in the Sacramento Valley of California to promptly and accurately report current cases of malaria at a time when the increasing frequency of the disease, in consequence of the extension of irrigation and rice-growing projects, constitutes a serious menace to the present and future health and welfare of the people of the State. Equally lamentable is the apathy on the part of the State health authorities to bring about the drastic enforcement of the official rules and regulations which require such reporting but which are often treated with official indifference little short of contempt.*

Objections will be raised to the suggestion that the reporting of serious diseases, including such, for illustration, as diseases of the heart and circulatory system, of the urinary system, of the respiratory system, all forms of tumors, etc., would impose a very considerable amount of additional clerical labor upon more or less overworked physicians in private practice, while, on the other hand, there would be the risk of making public information considered at law entirely confidential between patient and physician. The answer is that the physician would not be required to communicate the name of the person concerned, but only certain essential statistical facts, such as age, race, occupation, locality, etc., together with the nature of the disease, the duration of the treatment and the results thereof, conforming, broadly speaking, to the practice which now prevails in private and public hospitals. The only reason why the term "serious disease" is used is that, for the present, no complete list of such diseases as would most urgently require reporting is offered, and to make it clear that there is no intention of imposing upon the medical profession the very considerable burden of reporting all trivial ailments, of slight statistical, medical or economic value. It is precisely on this ground that the most serious objections lie against the compulsory system of health insurance, in that no discrimination is exercised in the form of treatment and that the major portion of time, thought and expense is devoted to trivial and partly imaginary ailments, to the serious disadvantage of patients in urgent need of highly specialized skill, prolonged nursing care, etc. In medicine, as in every-day life,

*See in this connection the observations and data on the failure of the U. S. Public Health Service to secure complete returns of malaria morbidity through the coöperation of practicing physicians in the Southern States as set forth in my address on "Malaria in Peace and War," prepared for the National Committee on Malaria, Prudential Press, 1918.

a choice must be made between that which is of major and that which is of minor importance. The same regrettable errors which underlie our public library management impair the practice of compulsory sickness insurance, in that in the former most of the public money is wasted on books and periodicals practically within the reach of every one, while the more costly works of reference, scientific periodicals, etc., urgently required by earnest students seeking to advance the interests of some one branch of science or another, are generally not available. Neither in Germany nor in England, under social insurance, are those who are most in need of thoroughly qualified medical or surgical skill, or prolonged nursing care, surgical or other appliances, high-priced medicines, costly institutional treatment, radium, X-ray, etc., cared for as their condition most urgently demands.* For these and many other reasons it would not seem advisable to require the reporting of minor or trivial ailments such as constitute in every-day practice a large proportion of the cases, having neither much pathological nor sociological significance; but it is insisted that the more serious types of disease should be systematically and accurately reported, so that their respective degree of frequency occurrence may be known and thoroughly understood. No real progress can be made in public health, in the larger sense, until the essential facts of health and physical well-being are made available and practically applied by those qualified to do so.

A MINISTRY OF HEALTH

The question involved goes to the root of the whole problem of *health* administration. A voluminous discussion in connection with the proposed Ministry of Health for the United Kingdom leads inevitably to the conclusion that no satisfactory solution can be had without a complete reorganization of the medical service in its relation to the general public.† As well said by Dr. Addison, Minister of Reconstruction, on November 7, 1918, in a parliamentary discussion of a bill to establish a Ministry of Health, "The main purpose of the bill was to bring together under one body of men and one ministry the chief government departments concerned in matters affecting the health of the people. The bill did not provide medical treatment for any individual, nor did it affect the functions of any local authority

*For an extended discussion of the more involved aspects of compulsory health insurance, see my address on "Facts and Fallacies of Compulsory Health Insurance," Newark, 1918, and a paper on "The Failure of German Compulsory Health Insurance—A War Revelation," read before the Association of Life Insurance Presidents, New York, December 6, 1913.

† Of historical value is Edwin Chadwick's address on the "Requisite Attributes of a Minister of Health," International Congress of Hygiene, Paris, 1878.

of any kind." In other words, the bill proposes merely the reorganization of existing public health functions, no serious attempt being made to establish a national health service upon a new foundation of basic principles governing the true health and physical well-being of the people.

More than a hundred years ago a New York physician, Shadrach Ricketson, in a work on "The Means of Preserving Health and Preventing Diseases," directed attention to the fact that modern (*sic*) medical practice was largely at variance with the ancient past when "a class of physicians called hygienists attended people only in health, in order to preserve it and to prevent diseases." "Although," he continues, "these practitioners have become extinct in this age, yet there is good reason to believe that they might be usefully revived and reestablished and that they would in great measure frequently supersede the necessity of the therapeutic or curative physicians of the present day." This argument, advanced in the year 1806, applies with decidedly stronger force at the present time, in view of the much more widely diffused understanding of the general principles of personal hygiene and the practical disappearance from among the population at large of seriously wrongful habits, gross intemperance in food and drink, indifference to unsanitary surroundings, etc. The suggestion made by Ricketson at the time may here be repeated, that "The idea of making every person his own physician in the cure of diseases appears foreign and in great measure impracticable; but as far as respects the prevention of them and the preservation of health, are more or less attainable by all who will attend to the means." In other words, *health* depends primarily upon a rational mode of living, with a due regard to "air, climate, drink, food, sleep, exercise, clothing, passions of the mind," etc. *

It is difficult to conceive how the proposed Ministry of Health can possibly meet the broader requirements of the bill in the direction suggested, as regards the multitude of matters which concern individual health and well-being. As long as a Ministry of Health is made to rest primarily upon the police powers of the nation, and of these chiefly the principle of quarantine, or the control of infectious and contagious diseases, the largest possible measure of progress in physical

* The whole subject of personal hygiene is presented in a conveniently condensed form in a manual on proper living upon a physiologic basis, entitled "Personal Hygiene," edited by Walter L. Pyle, M. D., including among the contributors George Howard Fox, M. D., on "Hygiene of the Skin and Its Appendages"; E. F. Ingals, M. D., on "Hygiene of the Vocal and Respiratory Apparatus"; J. W. Courtney, M. D., on "Hygiene of the Brain and Nervous System"; G. N. Stewart, M. D., on "Physical Exercise"; Joel E. Goldthwait, M. D., on "Body-Posture"; and G. H. Bergey, M. D., on "Domestic Hygiene."

health and physical efficiency will not be attained. It is true that the proposed Ministry is to include such important functions as the work of the Health Insurance Commission; of the Board of Education, as regards the health of mothers and infants; of the Privy Council, as regards midwives; and of the Home Office, as regards the protection of infant life. These functions are naturally involved in the larger question of national health administration, but subsidiary to the fundamental principle of the physical examination and medical supervision of at least that portion of the entire population whose ages fall below the year of legal majority, the reporting of all serious diseases and a limited state medical service.

The foregoing observations are not to be construed as an argument against the proposed Ministry of Health, which, though materially limited in plan and scope, should nevertheless result in most urgently required and far-reaching reforms. As has well been said in an editorial in the *British Medical Journal* of November 16, 1918, "The bill avoids, rather than meets, the major difficulties, but to get it into right focus, it is necessary to remember that it professes to do no more than make a beginning," being merely, in the words of Dr. Addison, "a first installment of the legislation needed to render it possible to achieve real progress in improving the health of the people." And, according to the same periodical, "The appeal set up is that the Ministry of Health should be empowered to take all possible steps to secure the effective carrying out and coördination of measures conducive to the health of the people, including the prevention and cure of diseases, the remedy of physical and mental defects, the collection and dissemination of information and statistics relating thereto, and the training of persons engaged in health services."

A STATE MEDICAL SERVICE

The third fundamental principle of modern health administration is a thoroughly well-worked-out *limited state medical service*, including under that term all of the medical services now rendered in connection with public institutions, poor-law establishments, schools, state and municipal dispensaries, clinics of all kinds, etc. The existing state medical service is already quite considerable and requires only to be amplified and reorganized on a more substantial and well-considered plan. The new organization, however, should rest upon a totally different principle from that of the old one, and that is the clear recognition of the duty of the state to afford the best qualified medical and surgical service to *all* those who are in need thereof, even though they are unable to pay

therefor the usual and not unreasonable charges common in every-day private practice. To overcome the difficulty of the stigma of apparent poor-relief the state medical service should be scrupulously kept outside of any general poor-relief administration, and, being supported by public taxation, conform in its essentials as a public utility to the same governing principles which apply to the use of public libraries, public schools, etc. Certain practical difficulties, no doubt, would arise at the outset of such a proposed state medical service, but it is the only alternative to the existing chaotic condition, which, in many respects, is in urgent need of radical reforms.*

The service, however, should be limited to serious cases, defined in the light of a rational understanding of public requirements, and no effort should be made to serve the large number of patients suffering from minor ailments, to the disadvantage of those in serious danger and most urgently in need of the proper medical or surgical skill, supplemented, if required, by even prolonged nursing, attendance, medicines, appliances, etc. However difficult the solution of this question may be, it represents a decidedly preferable form of organization to the extremely costly, burdensome, and undemocratic method of compulsory health insurance typical of German autocracy and involving a disregard of the personal rights and liberties of a true democracy.

LIMITATIONS OF THE POLICE POWERS IN RELATION TO HEALTH

The foregoing three principles, (1) the physical and medical examination of at least children and young persons to their majority, (2) the accurate and complete registration of at least all serious illnesses considered as a community problem, and (3) the establishment of a limited state medical service, do not precede, but merely logically follow or amplify the existing form of public health organization. There will never come a time when the police powers, as indicated at the outset, will not take precedence in dealing with communicable or quarantinable diseases, public sanitary necessities and public nuisances, over any other matter not immediately concerning the endangered

*The important question of the proper place of dispensaries, infirmaries and consulting clinics in modern health administration can not be adequately discussed on the present occasion. An important work which should be consulted by all who are interested in this subject has recently been published by Michael M. Davis, Ph. D., Director of the Boston Dispensary, and Andrew R. Warren, M. D., Superintendent, Lakeside Hospital, entitled "Dispensaries, Their Management and Development," New York, 1918. This work includes a brief historical account and a discussion of fundamental principles and technique, as well as descriptive accounts of special types of dispensaries and related public problems, such as the relation of dispensaries to the medical profession and the organization of a dispensary service for a community. The work includes also a useful bibliography and a copy of the Massachusetts dispensary law.

health and welfare of the people. But there can be no permanent improvement in health administration until the foregoing three principles, however much modified in matters of detail or enlarged in directions not indicated at the present time, are vigorously applied and made a condition precedent to whatever form of public health reorganization may be ultimately decided upon for the Federal Government as well as for the several States.

The scope of future Federal supervision of State activities is wholly a matter of speculative conjecture. There has on the one hand been a marked growth of Federal power, and on the other a practically unanimous public consent to the broadening of Federal administrative functions, so that it seems a foregone conclusion that the tendencies in this direction are towards further enlargement, rather than towards restriction or curtailment. The adoption of the Fourteenth Amendment in 1868 unquestionably affected profoundly the development of certain State functions and particularly the administration of quarantine and public health. The police power, according to Hare, "embraces all the operations of state and government; all the constitutional provisions presupposes its existence and none of them preclude its legitimate exercise." As observed by Willoughby in his work on the Constitution, "The enactment and enforcement by the States of quarantine laws, whether with reference to persons or to property, have given rise to numerous cases in which their constitutionality, as tested by the Commerce Clause, has been considered. Quarantine laws are, of course, but a variety of police laws and their validity is determined as such." While no legislative power with reference to quarantine is specifically given to the Federal Government by the Constitution, Willoughby points out that nevertheless the Government "has very broad powers on the subject, as incidental to its control of foreign and interstate commerce, admiralty and maritime matters and foreign relations." He concludes a brief reference to the subject with the remark that "To only a moderate extent, however, has this Federal power been exercised." The implication of all the legal observations on the quarantine and public health powers of the Federal Government seems to be that these are among the implied powers of the Constitution, when in the nature of the case the exercise of full Federal power may be needed because of the failure of State authorities to act with the required degree of efficiency demanded by the highest considerations of public welfare. It may, however, be deemed appropriate on some future occasion, if only for the purpose of avoiding confusion and conflict, to adopt a constitutional amendment under which the police powers with regard

to public health and quarantine would be transferred to the Federal Government to the full extent necessary for all Federal purposes.

OUTLINE OF PROPOSED STANDARD PLAN OF HEALTH ADMINISTRATION

It would unduly enlarge this discussion if all the details of such a required reorganization of our public health services were presented on this occasion, even in the broadest outlines compatible with the vital importance of the subject.* It has therefore seemed best to merely sketch the following plan of subdivisions of health functions as a tentative program suitable for discussion and rearrangement or amplification in matters of detail: The term "U. S. Health Administration" seems in every way preferable to the term "U. S. Public Health Service," at present in use. The functions already rendered, and to be rendered, are distinctly administrative, rather than in the nature of mere governmental services, possibly misconceived as matters of useful convenience, though of paramount necessity. The public has become familiar with the terms "Food Administrator," "Fuel Administrator," etc., and it would seem best, in any future health reorganization, to adopt such a term as is here suggested rather than to continue the obsolete and quite insufficiently descriptive one of "Surgeon General."

The proposed health administration, therefore, would seem to group itself naturally and more or less in the order of their importance or logical interdependence, into three main divisions, each of which should be in charge of an assistant federal health administrator, as follows:

*Among the more important contributions to the subject of health administration reorganization are the following: A Discussion on the Co-ordination of the Public Medical Services, by Dr. (now Sir) Arthur Newsholme, contributed to the Proceedings of the British Medical Association, 1907; The Economic Advisability of Inaugurating a National Organization of Health, by J. Fease Norton, read before the American Association for the Advancement of Science, 1906; Proposed Plan for an Institute of Public Health and Preventive Medicine, Confidential Publication, Columbia University, April 26, 1909; Argument for the Establishment of a National Department of Public Health, by U. S. Senator Robert L. Owen, U. S. Senate, March 24, 1910; Memorial in Behalf of the American Medical Association in Reference to Senate Bill 6049, Establishing a Department of Public Health and for Other Purposes, April 26, 1910; The Present Organization and Work for the Protection of Health in the United States, by Walter Wyman, M. D., Surgeon General U. S. Public Health and Marine Hospital Service, read before the American Public Health Association, 1910; Letter from the Secretary of the Treasury, transmitting, in response to Senate Resolution of January 16, 1913, information relative to the expense for the year 1912 of the Public Health and Medical Service, February 12, 1913; Paper on the School for Health Officers of Harvard University and the Massachusetts Institute of Technology, by Milton J. Rosenau, Bulletin Massachusetts State Board of Health, September, 1913; Address on the Training and Status of Public Health Officers in the United Kingdom, by Geo. H. F. Nutall, M. D., Transactions Fifteenth International Congress of Hygiene and Demography, 1912; The Full-Time Health Officer; An Address by Louis I. Dublin, Ph. D., State Conference of Health Officers of Kentucky, 1913; Co-operative Public Health Administration, by Prof. Earl B. Phelps, U. S. Public Health Service, September 25, 1914; Co-operation and Co-ordination of Voluntary Public Health Organizations, by Frederick R. Green, M. D., American Public Health Association, 1914; Report on the Present Condition of Public

PROPOSED DEPARTMENTAL ORGANIZATION (Tentative)

Division A—General Public Health and Quarantine.

- Sec. 1 Health Organization and Administration.
- “ 2 Health Laws and Ordinances.
- “ 3 States Relations Service.
- “ 4 International and Maritime Quarantine.
- “ 5 Communicable and Transmissible Diseases.
- “ 6 Urban Sanitation, Town Planning, and Housing.
- “ 7 Rural Sanitation.
- “ 8 Sanitary Engineering and Drainage.
- “ 9 Tropical Medicine and Sanitation.
- “ 10 Hygienic Laboratory.
- “ 11 General Scientific Research.

Division B—Medical Practice and Physical Welfare.

- Sec. 12 Medical Practice, Pharmacy, and Dentistry.
- “ 13 Physical Anthropology.
- “ 14 Child Hygiene.
- “ 15 School Hygiene.
- “ 16 Personal Hygiene.
- “ 17 Industrial Hygiene.
- “ 18 Mental Hygiene.
- “ 19 Social Hygiene.
- “ 20 Hospitals and Institutions.
- “ 21 Race Pathology.

Division C—Statistics and Information.

- Sec. 22 Mortality Statistics.
- “ 23 Morbidity Statistics.
- “ 24 Health Education, Health Propaganda, and Publications.
- “ 25 Associated Activities and Health Promoting Agencies.
- “ 26 Higher Education in Public Health Administration.

SCIENTIFIC INVESTIGATIONS AND GENERAL RESEARCH

In the foregoing outline no provision is made for special divisions or departments concerning diseases of exceptional importance, such, for illustration, as tuberculosis or malaria. Investigations or activities concerning these and other important diseases, such as pellagra, polio-

Health Organization in the United States, by Prof. S. M. Gunn, American Medical Association, 1915; A Survey of the Activities of Municipal Health Departments in the United States, by Frank Schneider, Russell Sage Foundation, 1916; Will the Private Practitioner Determine the Future of Public Health Work, Address by Haven Emerson, M. D., New York, 1916.

myelitis, trachoma, etc., are now carried on by the Public Health Service through the Department of Scientific Research. It may well be a question, however, whether these diseases should be made primarily a matter of research or of exclusive concern as to their more involved scientific aspects, or whether they should be conceived as administrative problems requiring action on the basis of a well-considered Federal policy coöordinated or correlated to State and local activities in the same direction. It would perhaps be better to make the functions of a research department more restricted and to broaden the field of administrative activity. In whatever direction such a broadening process might be deemed advisable, this would be readily feasible through the section Health Organization and Administration, or under one or more of the other subdivisions, such as Urban Sanitation, Rural Sanitation, etc.

The immense field of scientific research into questions and problems concerning health and longevity precludes more than a mere reference to future possibilities under the guidance of a thoroughly well-developed Federal Health Administration. The resources available for such work have, fortunately, very materially increased during recent years, on account of the establishment of several great foundations, primarily concerned with investigations of a highly technical character and involving large expenditures and the employment of technical skill of a very high order. Such an investigation, for illustration, as the report on the "Physical Welfare of Mothers and Children in England and Wales," issued by the Carnegie United Kingdom Trust in 1917, illustrates the hopelessness of individual or private research under the usual restrictions of income and time. An earlier but very admirable set of papers on "Research in Medicine," by Prof. Richard M. Pearce, originally delivered at the University of California, but subsequently reprinted from the *Science Monthly*, may be made note of as a basic outline of the problem in its broader aspects, both scientific and practical. From the individual viewpoint the subject of medical research and human welfare, based on a record of personal experiences and observations during a professional life of fifty-seven years, a brief treatise by Dr. W. W. Keen, Emeritus Professor of Surgery of Jefferson Medical College, Philadelphia, may be referred to as a most useful presentation of practically all the essential subjects which will in the future require more scientific consideration on the part of organized health organizations than they have had in the past. It may be argued, of course, that research work of this character should be left largely to the great foundations, to avoid duplication of effort and waste of time, energy and funds. But only to the extent that the coöordination

of health functions is perfected will the risk of such duplication be reduced to a minimum. There are many reasons for believing that at the present time parallel lines of identical research are frequently carried on by government and private interest, when a better understanding of plans and purposes would lead to earlier and better results. As admirable illustrations of research work by modern foundations, it is necessary only to mention the studies of the Rockefeller Institute for Medical Research, which have become indispensable to every student of medicine in all its branches, as well as in the administration of public health. Equally important are the scientific investigations of the Department of Research Medicine of the University of California Medical School, under the auspices of the George Williams Hooper Foundation. Finally, mention may be made of the contributions which have been forthcoming from the George Crocker Special Research Fund on the Scientific Study of Tumors and of the Collis P. Huntington Fund for Cancer Research of the General Memorial Hospital. The endowment of research along these lines has unquestionably rendered very substantial aid to the progress of medicine, but under a thoroughly reorganized Federal Health Administration such activities as now exist or as may come into existence in the future could unquestionably be more effectively coördinated to the plans of research as developed and worked out by the Federal Government.

TOWN PLANNING AND HOUSING

The intimate relation of housing to health is clearly recognized, but, speaking generally, the best available knowledge on the subject is not applied to the successful solution of present-day problems. Of the many housing surveys which have been made, perhaps one of the most useful from the medical viewpoint is "A Study of the Housing and Social Conditions in Selected Districts of Philadelphia," by Dr. Frank A. Crane, contributed to the Eleventh Annual Report of the Henry Phipps Institute. Considered merely in its immediate hygienic aspects, the housing problem is, however, but a part of the much larger question of city planning. The many reports which have been made give evidence of the absence of uniformity to thoroughly well-considered standards. City planning, of course, includes much more than the obvious considerations of health and well-being, but no plan or method can be considered satisfactory which does not rest upon fundamental principles of hygiene. Among the more recent investigations a report on "The Development and Present Status of City Planning in New York City," prepared by the Advisory Commission of the Board of Estimate and Apportionment, may be referred to as

a model of concise presentation of essential facts and principles, although no specific references are made to housing in relation to health. A report on a more elaborate scale has been issued by the City Plan Commission of Newark, N. J., including observations on the water front and waterways, markets, parks, housing, etc., but in this case also there is an almost complete absence of evidence that the sanitary engineering aspects of the problem were properly taken into account. To omit important sanitary considerations from city planning is as irrational as to omit such considerations from house planning or the construction of public buildings. To give priority to architectural or aesthetic considerations must necessarily lead in many cases to seriously injurious results. Most of our American cities are far from as attractive as places of residence as they could easily be made, if there were more rigid conformity to accepted principles of city and town planning, and the same conclusion applies to considerations of health and physical well-being.

The modern tendency towards so-called "garden cities" is deserving of every possible encouragement, if only on hygienic grounds. The relation of overcrowding to ill-health is clearly recognized, and the alleged necessity for such overcrowding is frequently merely a matter of economic consideration—or, even worse, of a deliberate encouragement of wrongful speculation in housing and land values. What may be achieved by means of the garden city movement has been made very clear by such contributions as those of Ewart G. Culpin, the Secretary to the Garden Cities and Town-Planning Association of England. Another English author, J. E. Hutton, Manager of the Labor and Catering Department of Vickers, Ltd., emphasizes with commendable brevity the essential facts of welfare and housing, including useful and extended observations on hospitals and medical services. In England the Local Government Board reports annually upon housing and town planning, in clear recognition of the fact that this subject is now one of serious government concern. The problem is, of course, as much one of rural as of urban hygiene, since much evidence has been forthcoming of far from satisfactory housing conditions in rural sections. A very convenient summary of facts and information on the whole subject of housing and town planning is presented in the Annual Proceedings of the American Academy of Political and Social Science for January, 1914. It is regrettable, however, that although practically every social and economic phase of the subject was made one of extended consideration, the health and hygienic aspects of housing and town planning were entirely ignored. There is, therefore, much urgency for a more active government interest in all that is

comprehended under the general term of urban sanitation, housing and town planning, if the required further reduction in the urban death rate, especially from tuberculosis and the acute infectious diseases of infancy is to be achieved within a measurable period of time.

A STATES RELATIONS SERVICE

The States Relations Service section rests upon the conception that the time is near when the Federal Government should provide its share of funds in the furtherance of the working out of a rational public health policy for every section and subsection of the United States. The constitutional difficulties of such coördination seem to have been successfully overcome in the States Relations Service of the Department of Agriculture, and the expansion of the same principle in inter-state highway construction, etc. It would seem entirely sound that the share of the nation in the general sanitary administration of the country should be one-third of the total cost, provided standardized requirements of service are demanded of the local authorities, upon whom would fall the burden of providing the other two-thirds of the cost, which again might be divided between the State (assuming one-third) and the county or municipality (assuming the other third). It is only upon some such principle as this that a perfect working plan of coöperation and coördination is ever likely to be developed. Unless the Federal Government has a direct financial interest in local plans and purposes of sanitary administration there can never be a truly national health interest, sustained by a national policy of public welfare.

Since the functions of the States Relations Service are generally not well understood, the following statement from the Annual Report of the Director of the Service for the year ending June 30, 1918, may prove of interest: "The States Relations Service represents the Secretary of Agriculture in his relations with the State Agricultural Colleges and Experiment Stations under the Acts of Congress, granting funds to these institutions for agricultural experiment stations and coöperative extension work in agriculture and home economics, and in carrying out the provisions of the Acts of Congress making appropriations to the Department of Agriculture for farmers' coöperative demonstration work, investigations relating to agricultural schools, farmers' institutes and home economics, and the maintenance of Agricultural Experiment Stations in Alaska, Hawaii, Porto Rico and Guam. During the fiscal year 1918 the service directly administered regular and emergency appropriations aggregating \$6,016,060, and had administrative and advisory relations regarding the expenditure

of \$3,520,000 of Federal funds and \$1,600,000 of State funds used as an offset for Federal funds under the coöperative extension act. In addition, the agricultural colleges and experiment stations used in experimental and extension enterprises over \$7,000,000 derived from sources within the States." On June 30, 1918, the force carried on the rolls of the States Relations Service aggregated about 6,800 employees. It may be said in this connection that the Office of Home Economics "includes investigations relative to food, clothing and household equipment and management." The suggestion, therefore, that the Federal Government should extend financial aid in a similar manner, possibly on the basis of one-third of the total expenditures, in the furtherance of approved plans of urban and rural sanitation, would not seem to imply a strained construction of Federal responsibility, nor an undue or undesirable enlargement of Federal power.

C_OMMUNICABLE A_ND T_RANSMISSION DISEASES

The section on communicable and transmissible diseases logically follows the section on international and maritime quarantine. Now that practically all the State quarantine stations have been transferred to the Federal Government the effectiveness of Federal quarantine laws, rules and regulations has been very materially increased. Whether it would be wise to include in this section the medical inspection of immigrants is open to question; possibly a subsection might be created, to be known as "Immigration Service," for in many cases quarantine administration and immigration inspection are carried on by Federal officers within the same or adjoining premises, and possibly by the same medical officer. Since the primary purpose of all quarantine is to control the spread of communicable diseases, it would seem best that, in the logical order of arrangement, the latter should follow the former, even though much, if not most, of the work in connection therewith on the part of the Federal Government would, unless present methods are materially changed, consist of epidemiological research and emergency work.

S_ANITARY SURVEYS

The urgency of qualified sanitary and social surveys would hardly seem to require extended consideration. The fundamental principles, however, which should underlie such surveys are far from being thoroughly understood and they are frequently entirely disregarded in so-called "health surveys" of even representative communities. In most of the so-called surveys the absolutely required division of essential technical functions is rarely adhered to. Various subjects or groups

of facts are frequently considered by a single investigator or director, who at best may be but a specialist in a single and strictly circumscribed branch of sanitary science. For general purposes, of course, even a superficial investigation may be useful and prove sufficient as a basis for urgently required immediate reforms. Thus, for illustration, the sanitary survey of Charleston, West Virginia, by Mayo Tolman, Director and Chief Engineer of the West Virginia State Department of Health, may be said to be a model investigation within the restricted sense of the term. Not even an expert sanitary engineer can be expected to do entire justice to the wide range of subjects generally included in such a survey, from infant mortality and the transmissible or communicable diseases to food, milk, housing and sanitary nuisances.

Thus far in most of our States and localities the required special technical ability of a high order has been wanting to provide an adequate staff of experts for a sanitary survey in strict conformity to modern standards of accuracy and thoroughness. There has not been forthcoming, for illustration, such a thorough investigation as has been made of the sanitary problems, present and future, of the city of Dublin, Ireland. Too often it is taken for granted that any sanitary official, qualified in a restricted field of public activity, is also competent to express an opinion and advance even radical recommendations concerning the numerous and frequently very important questions involved in investigations of this kind. The increasing demand for such surveys, therefore, suggests the need of higher standards of inquiry, such as can result only from the deliberations of qualified experts of the first rank, usually to be found only in the employ of the Public Health Service of the Federal Government or of the health departments of the larger and more progressive States. The required standard methods of inquiry are more likely to be adopted if approved and recommended by a Federal Health Administration than by State authority or sanitary experts in private practice.

Sanitary surveys in the more general sense of the term to which attention may be directed are the Reports on Public Health in Springfield, Illinois, by Frank Schneider, of the Russell Sage Foundation, New York, 1915; The Health Survey of New Haven, by C. E. A. Winslow, James Cowan Greenway and David Greenberg, of Yale University; the Lawrence, Massachusetts, Survey, prepared jointly by Francis H. McLean, Arthur D. Marble, Robert E. Todd and Frank B. Sanborn; and the Lawrence, Kansas, Social Survey, made under the direction of Prof. F. W. Blackmar, a sociologist of the first rank, and including a section on school sanitation, with a number of

tables of physical measurements of Lawrence school children, and an analysis of sickness statistics and the results of physical examinations, particularly of eyesight and dentition.

None of these investigations can be considered entirely satisfactory, though each and all are useful in their way, as indications of an aroused interest in the underlying facts and conditions which determine the health of the community. The ultimate attainment of the ideal would seem to lie in the direction of the method which has been so successful on the part of the U. S. Bureau of Soils, which has issued a large number of special reports on selected areas, for which the prevailing soil types, their fertility and agricultural use have been determined. Probably 15 per cent. or more of the entire area of the United States has gradually been surveyed in this manner, and wherever feasible the topographic atlas sheets of the U. S. Geological Survey have been utilized. Under a thoroughly reorganized Federal Health Administration it would become an important duty of the Government to initiate local sanitary surveys in much the same manner as this work has been carried forward by the Bureau of Soils on a basis of coöperation with State authorities. Such surveys would disclose favorable or unfavorable conditions affecting health and longevity and make the facts a matter of permanent record. There are, of course, many other special factors involved besides topography, which is here emphasized chiefly because the necessity for an exact ascertainment of physiographic factors is so generally ignored.

An excellent illustration of a Survey of Social Agencies is an investigation of conditions in Alameda County, California, prepared by Jean Howard McDuffie for the Board of Public Welfare and published by the Board of Supervisors, Oakland, 1917. This report shows by twelve maps, amplified by numerous statistical tables, etc., the numerous agencies rendering medical assistance in the care of the sick, in public, semi-public and private hospitals, etc., home visiting or nursing, and the operations of local boards of health. The basis is here provided for a future survey in which more attention should be given to the strictly scientific technical considerations not within the plan or scope of the present inquiry. The authors of the report have rendered a real service not only to the citizenship of Alameda County, but to the country at large. A Federal Health Administration would unquestionably initiate similar investigations on a coöperative basis throughout the country and make available the required information without which further sanitary progress on a large scale is not likely to be attained.

There is naturally a close relation between sanitary surveys and proper methods of town planning, rehousing, and urban development generally. As a part of its war activities the Committee on Labor of the Advisory Commission of the Council of National Defense caused to be prepared a report on the "Sanitation of Rural Workmen's Areas with Special Reference to Housing," which is a suggestive illustration of recognized fundamental principles which only too often are disregarded, even in plans which claim to be models of their kind. As further evidence of progress, reference may be made to the Standards of the Department of Health and Sanitation of the U. S. Shipping Board Emergency Fleet Corporation, prepared by Lieut. Colonel Philip S. Doane. This report includes a useful section on mosquito eradication and control, than which there is perhaps no more important health problem connected with military or labor camps in sections in which anopheline mosquitoes prevail. The most encouraging practical illustration of progress in the United States is the group of mining villages erected under the supervision of Mr. C. L. Close by the Tennessee Coal and Iron Company of the United Steel Corporation in the vicinity of Birmingham, Alabama. In the working out of the practical details of this undertaking, which is on a considerable scale and which includes every element of community life, such as schools, playgrounds, recreation centers, infirmaries, hospitals, etc., the fundamental principle has not been lost sight of that the essentials of housing include all the essentials of *home life*, and it is most gratifying to be able to say that no race discrimination has been practiced, but that the cottages and surroundings are identical for both the white and the colored employees.

THE HYGIENIC LABORATORY AND SPECIALIZED RESEARCH

The work of the Hygienic Laboratory at the present time is subdivided into four divisions, respectively (a) pathology and bacteriology, (b) pharmacology, (c) zoology and (d) chemistry. The question may be raised whether the Laboratory should not concern itself more extensively with problems of medical entomology regardless of the fact that already much admirable work in this field is being done by the Bureau of Entomology of the Department of Agriculture.* A certain amount of duplication of effort is absolutely unavoidable. To carry on malaria research, for illustration, without the closest possible

* The field of medical entomology is immense, and even more so than that of economic entomology. An excellent outline of the essential facts which require to be taken into account is the "Handbook of Medical Entomology," by Riley and Johannsen, published by the Comstock Publishing Company, Ithaca, N. Y., 1915. A more popular work on the subject is "Insects and Disease," by R. W. Doane, Assistant Professor of Entomology, Leland Stanford University, London, 1910.

coöperation of a well-organized department of medical entomology is practically impossible. As generally understood, the main purposes of the Bureau of Entomology of the Department of Agriculture are economic, and such research work, for illustration, in connection with malaria and mosquitoes as has been carried on by the Bureau has been primarily, if not exclusively, of an economic nature, emphasizing the relation of malaria frequency to variations in crop productions, etc.*

The question may also be raised as to whether the Hygienic Laboratory should not give more consideration to autopsy records, which, at the present time, if collected at all in local and State hospitals, are generally deficient in matters of important details, in that the objective findings are not clearly stated, or that the anatomical diagnosis is not concisely set forth in a manner suitable for future collective investigations. There is the utmost urgency for increasing the number of autopsies, especially in public institutions, and efforts in this direction, sustained by a Federal Health Administration, would prove unquestionably more successful than has been the case in the past.†

Attention may here be directed to the first three Annual Reports of the Medical Research Committee of the National Health Insurance of Great Britain, the work of which is carried on respectively by (1) a Department of Bacteriology, (2) of Bio-Chemistry and Phar-

* A full account of what the Department of Agriculture has done in this connection has not yet been made public. The results of the experiment and demonstration at Mound, La., are, however, sufficiently conclusive to justify the suggestion that inquiries of this nature should be conducted on a much larger scale in the future. After all, it is largely upon economic grounds that public health measures must rest if they are to be assured of continued and substantial financial support. See in this connection my "Plea and Plan for the Eradication of Malaria Throughout the Western Hemisphere," and also my additional discussion of the "Malaria Problem in Peace and War," which includes a number of references to the demonstration at Mound, La.

† It is a serious error to carry the conclusions derived from autopsies too far as regards the anatomical and pathological findings concerning the true cause of death. As observed by F. J. Smith, in the *British Medical Journal* for December, 1905, "It is absolutely essential in arriving at a correct conclusion that the clinical history should be co-ordinated with the pathological findings." There is a large field of most useful information, as yet more or less neglected on the part of those who are in complete control of all the facts. Every large hospital, at least, should have a resident pathologist and there should be strict conformity to a well-established technique from the general examination of the body to the processes of dissection as such and the careful as well as thorough examination of all the regions and particular organs of the body. Frequently insufficient attention is paid to special conditions and lesions which may have a most important bearing upon medico-legal questions involved in the cause of death. One of the best works on the subject of post-mortem examinations is a treatise by William S. Wadsworth, M. D., Philadelphia, 1915. Another useful work is entitled "Dissection Methods and Guides," by David Gregg Metheny, Philadelphia and London, 1914. Most useful as regards the practical value of autopsy findings and their application to problems of general medical practice is "Gleanings from the Calcutta Post-Mortem Records" by Leonard Rogers, M. D., Calcutta, reprinted from the *Indian Medical Gazette*, Calcutta, 1908-13. Of special value to the student of the subject are the case records, both ante-mortem and post-mortem, as used in the Weekly Clinico-Pathological Exercises at the Massachusetts General Hospital, edited for the use of practitioners by Richard C. Cabot, M. D., and Hugh Cabot, M. D. Four volumes have been published, with numerous illustrations, charts, etc., all of which are an admirable model for other institutions to follow. There are no reasons why this method should not be insisted upon by the American College of Surgeons as one of the prerequisites of efficiency in hospital management, conceived in its higher aspects as a public health function.

macology, (3) of Applied Physiology, and (4) of Statistics. The general plan of research includes such special subjects as Tuberculosis, Rickets, the Hygienic Relations of Milk, the Rheumatic Affections, the Diseases of the Nervous System, the Thyroid Secretions, Dust Inhalation and Pulmonary Diseases, Oral Sepsis, Diabetes, Anaphylaxis, Diseases of the Heart, etc. Special inquiries have been made in connection with the war into such subjects as Cerebro-Spinal Fever, Neurological Inquiries, Industrial Fatigue, and the Health of Munition Workers, Diseases of the Soldier's Heart, etc.* Thus far ten special reports have been published, including a report on the Incidence of Phthisis in the Boot and Shoe Trade; Recovered Cases of Intestinal Diseases; the Mortalities of Birth, Infancy and Childhood, etc. Of practical value also, are the plan and scope of the scientific industrial research of the Special Committee of the Privy Council, which to date has issued three annual reports, and a Special Report on Industrial Research in America, suggestive of the urgency of a similar publication on organized research in medicine and public health.

The National Research Council of the Council of National Defense, of which Prof. Geo. E. Hale is the chairman, has an important Committee on Anatomy, of which Prof. Henry H. Donaldson is the chairman; a Committee on Anthropology, of which Prof. Wm. H. Holmes is the chairman; a Sub-Committee on Bio-Chemistry and a General Committee on Medicine and Hygiene, with Col. Victor C. Vaughan as chairman. This committee has a Sub-Committee on Psychiatry, the chairman of which is Prof. Stewart Patton. In addition thereto, however, the Council has organized a General Committee on Physiology, with Prof. Walter B. Cannon as chairman; and a Committee on Psychology, with Col. Robt. M. Yerkes as chairman. The work of this committee has been subdivided into sections on the Psychological Examination of Recruits, on Aviation, on Re-Education and Vocational Training and Vision. It should not be difficult after the war to reorganize the work of these

* The publications of the Health of Munition Workers Committee of the British Government are models of scientific inquiry and concise presentation of essential facts bearing upon extremely important aspects of the labor problem. Of these, for the present purpose Reports Nos. 7 and 8, on Industrial Fatigue and Special Industrial Diseases, are of exceptional importance; but reference also requires to be made to Report No. 10, on Sickness and Injury, which includes suggestions for systematic records, etc. The general results of the inquiry as presented in twenty special reports have been summarized in a Hand-Book on the Health of Munition Workers, issued in London, 1917. In addition thereto an extended report has been issued on Industrial Efficiency and Fatigue, than which no more useful statement of facts and conclusions on the subject-matter under discussion has thus far been published. No similar inquiries corresponding in plan and scope as well as scientific thoroughness in the presentation of the facts have as yet been forthcoming for the war industries of this country.

committees and sub-committees and coördinate the work of such a permanent organization to the activities of the Hygienic Laboratory of the Federal Public Health Service.

MEDICAL PRACTICE, PHARMACY AND DENTISTRY

The section on medical practice, pharmacy and dentistry will probably be the one to which most serious objections will be raised on practical grounds. The time is bound to come, however, when this problem will have to be met and when uniformity in medical practice and interstate rights and privileges will have to be granted to graduates of recognized institutions passing examinations in conformity to Federal requirements. How far this section would ultimately encroach upon collateral branches of medicine and surgery, such as osteopathy, chiropractique, etc., may well be left to the future. In any event, even if at the outset entirely without power to establish standard requirements of medical practice, such a section would serve the extremely useful purpose of collecting information and of assisting in the solution of interstate medical problems which are now a matter of serious concern in many sections of the country. Such a section would also be in an admirable position to best utilize the large amount of information collected by the Medical Section of the Council of National Defense and to keep such information down to date, for possible future military or other requirements. How far this section should include the nursing profession, both public and private, may also, for the time being, be left undecided.

There is much danger of confusing the true functions of the medical profession with the services of men employed in public health activities. It is grossly misleading to assert that "the physician is the guardian of the public health." Equally mischievous is the assertion made in a recent monograph on "The Practice of Medicine as a Vocation," issued by the Federal Board for Vocational Education, that "the work of the physician is twofold: It is his duty to cure those who are sick and to keep the well from becoming sick." The physician in general practice is absolutely without responsibility for the health of those who do not consult him. There is nothing contained in the curriculum of even the best medical schools which thoroughly fits a physician for the practice of preventive medicine in an advisory capacity. The same conclusion applies to medical examiners, who are almost without exception men trained in the practice of medicine as a healing art. The successful prevention of disease, individually or collectively, requires a totally different course of training and involves a largely different set of facts and principles than the

training for medicine in general or specialist practice. No system of clinical medicine, however extensive, can materially aid in the solution of the many practical questions which confront those who are concerned with the prevention of disease or with physical development and growth or with abnormalities of metabolism and nutrition. The status of the physician in general practice is sufficiently difficult and burdensome not to require the discharge of additional and frequently highly responsible functions in the administration of public health. That such services are rendered in a large measure and particularly in rural or isolated communities and frequently with beneficial results is not an answer to the argument here advanced that preventive medicine is a separate and distinct branch of science in which strictly medical considerations whether pathological, physiological or clinical are distinctly of secondary importance.

The standards of medical education are becoming more rigid and effective. It is held, and properly so, that a medical course of less than four years yields unsatisfactory results. To require four years of exacting study in subjects which lie largely outside of the practical operations of a modern health department is to waste much valuable time and opportunity urgently required for other purposes. Arguments have been advanced that before the war the number of physicians in general and specialist practice was entirely too large and that therefore the economic status of the medical profession was far from satisfactory. Evidence, however, has been forthcoming to prove that there is gradually an increase in the income of medical graduates from first-class medical schools, or approximately from \$900 during the first year to nearly \$5,000 in the fourteenth year. If the decline in the death rate is a conclusive index of the diminishing frequency of diseases requiring more or less prolonged medical attendance, there is no doubt much truth in the assertion that the economic position of at least the general practitioner has in many cases deteriorated, for if, for illustration, in a community in which malaria and typhoid fever have been excessively common there is a practical eradication of these diseases in consequence of modern health activities, there must necessarily be a material reduction in the physician's income.

It would therefore seem of the utmost importance that the medical profession should clearly recognize the necessity of a complete change in its attitude and give more encouraging support to those who may wish to take courses in preventive medicine in the furtherance of which only a minimum amount of knowledge* concerning anatomy, physiology

* See, for illustration, "Essentials in Medicine," by Charles P. Emerson, M. D., New York, 1911.

and pathology is required. With important modifications this conclusion also applies to the position of those who prefer to specialize in medical examinations and industrial hygiene. The field of opportunity for remunerative employment in these branches is constantly broadening, in contrast to a diminishing area of usefulness in general practice. If, for illustration, the present movement for a nation-wide campaign for medical examinations and re-examinations gains the required public support, there will arise a demand for a highly specialized type of ability which is, generally speaking, not available. The recent work on "Medical Diagnosis" by Charles Lyman Green, author of a standard work on "Medical Examinations for Insurance Purposes," clearly emphasizes the gradual change in the point of view which must govern in the ultimate development of a new science of public and personal hygiene, in which the physical examination of the person and the qualified observation of at least the outward signs of disease will receive prior consideration. In such a science the essentials of physical anthropology will demand equal consideration with the fundamentals of clinical medicine.

Physical examinations require to be clearly differentiated from medical examinations. Both may be made properly by different persons or they may be made by one person thoroughly qualified to make both; but it does not necessarily follow that a physician, however familiar with physical and clinical diagnosis, is competent to pass upon the numerous questions involved in a physical examination, as has been illustrated by the experience under the First Selective Draft. The conduct of so-called "Medical Examination Campaigns" cannot be approved of unless the work is done in a thoroughly qualified manner. In the long run not much is gained but much of real value may be lost by careless methods of examination. It will never be possible within the limitations of our knowledge to enable a community to "take account of stock" physically as it has been argued is the common practice in ordinary business. The parallel drawn is both inexact and misleading. Nor will it ever be possible to give "the human machine" a "thorough overhauling," for here again the parallel of comparing the human body to a machine is inexact and misleading. There is far too much involved in examinations of this kind to permit any one to take reckless chances with the health of the individual as well as with that of the community. Even though much good may be done in one direction by the ascertainment of a certain amount of existing but unobserved disease, much harm may be done, on the other hand, by impairing public faith in the real value and proper function of medicine as a healing art.

PROBLEMS OF ANTHROPOLOGY

The section on physical anthropology should be in charge of a thoroughly qualified expert whose main function at the outset should be to collect in a systematic manner the vast amount of existing anthropometric material. Assistance should be rendered in the preparation of uniform or standard blanks and the perfection of standard tables of physical proportions, all of which are at present more or less inadequate for practical purposes. There should be active coöperation, of course, with the anthropometric investigations of the Children's Bureau and other governmental or private agencies concerned with the ascertainment of physical growth and development. The U. S. Bureau of Education in 1914 issued a Bulletin on Physical Growth and School Progress, prepared by Prof. Bird Thomas Baldwin, of Swarthmore College, in which a first attempt is made to bring together the available material on physical growth with a due regard to age, grade and school standing as well as the required facts of the individual increment of growth in height, weight and lung capacity. There are included some extremely suggestive observations on height as affected by nationality, the relation of height to complexion, as well as the average height of American born children mathematically calculated by Dr. Franz Boas from the data of nearly 100,000 children in the public schools of representative American cities. Most of the data available, however, fail conspicuously, on account of the disregard of the underlying racial considerations; which explains in part the reasons why the Committee on Race in Relation to Disease (Civilian Records) of the National Research Council intends to concentrate its work in the near future upon an effort to secure more homogeneous data for more trustworthy comparative purposes. It must be self-evident that so-called *standards* derived from heterogeneous masses of statistical material cannot possibly be relied upon for a nation like the United States, where the racial distribution is perhaps more complex than in any other civilized country at the present time. The range in variation in the physical proportions of the different races is found to be much greater upon careful analysis than is apparent upon superficial consideration. Among other illustrations reference requires only to be made to the anthropological investigations of Dr. Ales Hrdlicka on 1,000 white and colored children, inmates of the New York Juvenile Asylum, which include observations on abnormalities of the head, the hair, the forehead, the face, the ears, the gums, the dentition, the palate, the uvula, the limbs, and the body in general.

A much larger amount of material is, however, required, but unfortunately the underlying racial considerations are generally disregarded in ordinary routine examinations of children for school purposes. Data for Chicago school children or Boston school children cannot possibly be of much intrinsic value if merely presented in the aggregate and not with a due regard to race or parentage. Improved methods of physical measurements have been suggested by Miss Helen Thompson Woolley, the Director of the Vocational Bureau of Cincinnati, Ohio, in a contribution to the *Journal of Educational Psychology*, November, 1915. There is, however, as much danger of over-emphasizing the necessity for numerous and minute measurements as of underrating the need for thoroughness and accuracy in the more simple measurements of height, weight and lung capacity. In appreciation of the practical difficulties which are met with in all investigations of this kind, but particularly when applied to adults employed in industry, and which have been clearly recognized by the Committee on Race in Relation to Disease (Civilian Records), of the National Research Council, the standard card recommended by this committee includes the following requirements: (a) weight, both nude and clothed; (b) height, standing and sitting; (c) arm span; (d) chest, at full inspiration and at full expiration; (e) girth, at navel; (f) lung capacity; (g) foot length; (h) flat feet; (i) hand grip; (j) missing parts; also eye color, hair color and chest pilosity. The medical examination includes the pulse (standing), vaccination scars, hearing, vision and the color sense. In addition thereto a statement is required regarding the muscular development and the condition of the teeth (Appendix A).

The ascertainment of physical facts of growth and development is a fundamental prerequisite of rational public health administration. Thus far the U. S. Public Health Service has only concerned itself with this question in a very restricted field. In 1915 a brief publication was issued on the "Heights and Weights of Children," according to age and sex, with medical observations having reference particularly to cases of intestinal diseases. The name of the locality was, however, omitted. The value of the data, for the reason stated, is therefore materially reduced, since much, of course, depends upon the location and the character of the population as to racial antecedents. In 1916 Dr. Lee K. Frankel and Dr. L. I. Dublin published jointly a study of the measurements of boys and girls 14 to 16 years of age who were granted employment certificates in the City of New York. This publication is an important contribution to the subject, and more so in view of the fact that the elements of race and nativity were taken into account. It is to be hoped that the much larger

amount of material which is now available will some time in the near future be utilized for the purpose of a more extended investigation. The increasing practical importance of the subject therefore demands its more qualified consideration by Federal and State health departments as well as by other health promoting organizations. The required progress towards standardization and unification is, however, not likely to be attained within a measurable period of time unless more substantial encouragement is forthcoming from both the government and private agencies. Whatever in the future is done in this most promising field of scientific research having to do with the growth and development of the forthcoming generation should as far as practicable be coöordinated to the research efforts of the Committee on Race in Relation to Disease (Civilian Records) of the National Research Council.*

INDUSTRIAL HYGIENE

The section on industrial hygiene, of the U. S. Public Health Service, has heretofore concerned itself chiefly with limited inquiries into highly specialized phases of the occupational disease problem in coöperation with the Bureau of Mines, the Bureau of Labor Statistics, etc. In view of the fact that the recently established section on Working Conditions Service of the Department of Labor contemplates a thoroughly well-developed division of industrial hygiene, in charge of a former specialist of the U. S. Bureau of the Public Health Service, the future functions of a reorganized Federal health service in this field will probably be still more circumscribed. That, however, may be a material advantage, in that the scientific research work to be undertaken or the coöperation required in highly specialized fields of inquiry will be concentrated upon the more subtle and difficult problems, rarely permitting of being adequately dealt with under a broader and more immediately practical division of work.

The Division of Industrial Hygiene of the Working Conditions Service is at present being organized upon the following plan of procedure:

1. To make studies of working conditions in their relation to health, to determine hazardous processes and methods.
2. To formulate sanitary codes and regulations to meet health hazards in the various industries.
3. To formulate standards of medical practice in industries and to coöperate in the betterment of medical service in industry and industrial centers.

* An encouraging proof of progress is the recently commenced issue of a *Journal of Physical Anthropology*, of which Prof. Ales Hrdlicka, of the Smithsonian Institute, is the editor.

4. To determine standards of physiological requirements for various occupations.
5. To determine methods of proper placement of workers.
6. To secure statistical data of industrial morbidity.
7. To promote facilities for the education and training of physicians and sanitarians for industries.
8. To assist industries in obtaining physicians and other technicians for industrial service.
9. To disseminate information concerning measures necessary to safeguard workers against industrial health hazards and to secure the coöperation of all elements, governmental or private, in the furtherance of the industrial health program.

What has thus far been achieved in giving publicity to the results of investigations in the field of industrial hygiene and sanitation is best illustrated by what has been done through the U. S. Bureau of Labor Statistics. Among the more important bulletins issued by this office are reports on Phosphorus Poisoning in the Match Industry in the United States (1910); Industrial Lead Poisoning of Great Britain and the White Lead Industry in the United States (1911); Lead Poisoning in the Potteries (1912); the Hygiene of the Painters' Trade (1912); Lead Poisoning in the Manufacture of Storage Batteries (1912); Industrial Poisons Used in the Rubber Industry (1912); Anthrax as an Occupational Disease (1912); the Hygiene of the Printing Trade (1912); Industrial Poisons Used or Produced in the Manufacture of Explosives (1912); Mortality from Respiratory Diseases in the Dusty Trades (1918); etc.

The investigations have, however, in the main, been concerned with the more obviously dangerous industrial processes. The larger field of industrial activity in its relation to health has as yet received entirely inadequate consideration. Only a thoroughly coöordinated Federal and State health service, acting in coöperation with labor departments and industrial accident boards, can succeed in securing within a reasonable period of time the required basic data for a thoroughly practical industrial hygiene. The gradual adoption of the principle of workmen's compensation for industrial diseases gives promise of useful results. It is, in fact, a foregone conclusion that, if such a principle becomes universal throughout the country, a large number of occupational diseases, now more or less obscure or ill-defined, will be ascertained, as best illustrated perhaps by the case of miners' nystagmus, and the rather rare forms of occupational skin diseases. It is, therefore, to be urged that more adequate provision

should be made, even under existing conditions of public health activity, for the ascertainment and prevention of occupational diseases. Much valuable assistance in behalf of this requirement is being rendered by occupational disease clinics, such as have been established in New York, Boston and Philadelphia.*

RACE PATHOLOGY AND TROPICAL HYGIENE

The suggested section on race pathology touches a field which has heretofore received decidedly inadequate consideration. Aside from the obvious necessity that more scientific attention should be given to the problem of negro mortality in the Southern States, affecting a population of more than ten millions, economically of the utmost importance to the Southern agricultural and industrial interests, the more restricted fields of inquiry into the disease peculiarities of our native Indians, of the Orientals and Mexicans residing within our borders, of the numerous races, pure and mixed, in the Hawaiian Islands, and of the natives of Porto Rico, the Virgin Islands, etc., all suggest the necessity for a separate division of work, in charge of a thoroughly trained expert, whose work should be coöordinated, as far as practicable, to the corresponding efforts of the Committee on Race in Relation to Disease of the National Research Council.†

It is most regrettable that there should thus far not have been a much more active interest in the broader problems of tropical hygiene and sanitation. We require for this country an institute of tropical medicine and hygiene, conforming to the schools of tropical medicine of Liverpool and London and the Wellcome Tropical Research Laboratories of Khartoum and the Malay Institute for Medical Research. As a most promising indication of our progress

* In curious opposition to its earlier interest in the reporting of and compensation for occupational diseases the American Association for Labor Legislation now minimizes the urgency of legislative action, on the ground that such compensation can adequately be provided for only through compulsory health insurance. The insincerity of this change in viewpoint is obvious. The present injustice of non-compensation for occupational diseases is not remedied by the promise held out that some time in the future compulsory health insurance may come into existence. Whether occupational diseases in the legal sense are rare or frequent is quite immaterial, as emphasized in the arguments in favor of Federal legislation prohibiting the manufacture of poisonous matches. The small number of deaths resulting from phosphorus necrosis was not a proper argument against the justice and expediency of such legislation. The reason why the American Association for Labor Legislation now makes light of occupational disease compensation is because if such compensation were to become universal no argument whatever would remain for the wrongful proposition that industry should be charged to the extent of two-fifths with the burden of compulsory health insurance for sickness not directly or specifically attributable to occupational activities.

† As a convincing illustration of the thoroughness with which certain problems of tropical medicine are at the present time being considered by our government medical officers, reference may be made to a recent treatise on "Tropical Surgery and Diseases of the Far East," by John R. McDill, M. D., Major, Medical Reserve Corps, U. S. A., London, 1918. This work includes extended observations on China and the Philippines and answers to a questionnaire of fifty-three inquiries sent to countries in and about the tropical zone. There is an exceptionally interesting section on cancer, which confirms the prevailing point of view that malignant disease is relatively very rare among native races.

in this direction, reference, however, may be made to the recently published reports and collected studies of the Institute of Tropical Medicine and Hygiene of Porto Rico for the period 1913-17, including among other contributions two exceptionally valuable papers on "Clinical Studies of Dengue," by W. W. King, and "Observations upon the Skin Diseases of Porto Rico," by the same author. The growth of our foreign commerce with tropical and semi-tropical countries makes it a foregone conclusion that in the near future a much larger number of Americans will be subject to more or less abnormal health and climatic exposure in countries regarding the pathology of which our information is quite fragmentary and otherwise unsatisfactory at the present time. Conversely, there will unquestionably arise a demand for experts in tropical hygiene and sanitation, trained in the United States, for service abroad. The object of the Liverpool School of Tropical Medicine, which was founded in 1898, was to promote "the study of tropical medicine by the investigation of diseases in tropical countries and of providing suitable training for medical officers and others proceeding to the Tropics." The terms of teaching include three courses of instructions annually, of three months' duration, consisting of, first, a daily lecture excepting on Saturdays and Sundays, second, practical laboratory work, third, clinical and pathological work at the Royal Hospital. The Liverpool School, founded in 1899, provides a more elaborate course, including a special section on the hygiene of the tropics, partly with reference to personal hygiene, chiefly the pathological or physiological effects of climates and seasons on the human system and the influence of hygienic surroundings and of habitation, food and drink, clothing, exercise, bathing, as well as rest, employment and recreation. There is a section on general hygiene, inclusive of such subjects as water and water supplies, food and principles of diet, milk, grain, soil removal and disposition of waste matter and the disposition of the dead. Finally, there is a third section on hygiene in relation to towns, houses, smoke, stables, hospitals, asylums, jails, leper settlements, factories, plantations, immigrant stations, pilgrim festivals or holiday gatherings, lodging-houses and pilgrim and coolie ships. While considerable progress has been made in this country, especially through the Harvard School of Tropical Medicine,* which has sent out several expeditions to South America,

*The Harvard School of Tropical Medicine has issued an unusually interesting and valuable report on its first expedition to South America, made under the direction of Richard P. Strong, M. D. The report includes investigations of the so-called Oroya Fever and Verruga Peruviana. There has also been issued a "Medical Report on the Rice Expedition to Brazil," by Dr. W. T. Councilman and R. A. Lambert, of the Harvard School of Tropical Medicine, Cambridge, 1918. This report is characteristic of perhaps the most useless form of superficial foreign investigations, typical rather of missed than of realized opportunities

etc., there is the utmost urgency for much broader conceptions as to our national duty and interest in a matter which unquestionably will require more governmental consideration in the near future. If we are to sustain our position as a world power, we must begin *now* to train our men for world as well as for national service, and in no professional field is such training more essential than in tropical medicine and tropical hygiene. As a practical illustration, reference requires only to be made to the work of the China Medical Board of the International Health Board of the Rockefeller Foundation and the considerable expansion of American medical missionary services throughout China during recent years.*

HOSPITALS AND INSTITUTIONS

The statistics of hospitals and institutions are most urgently in need of being standardized. There is such a large variety of blanks and forms, and such an unfortunate blind conformity to antiquated methods no longer applicable to modern requirements, that drastic reforms are called for. Institutional morbidity statistics are of a high order of intrinsic value and practically useful in connection with a variety of medical, social and economic problems. The work of this section should be intelligently coördinated to the corresponding efforts of the College of Surgeons, the American Public Health Association, the American Hospital Association, etc.

* Among the more important publications on the health problems of China and the Chinese are the medical reports of the China Maritime Customs Service and the *China Medical Journal* of the China Medical Missionaries Association. The most useful source of information on the medical problems of China is the treatise on the "Diseases of China," by Jeffries and Maxwell, London, 1910. The most convenient summary of existing health conditions is the report on Medicine in China by the China Medical Mission of the Rockefeller Foundation, New York, 1914.

for scientific research. The report includes some very interesting and useful data, which have to be extracted with difficulty from a mass of irrelevant and almost puerile observations. To those who are familiar with the thoroughly scientific work of Spruce on the Amazon River, who suffered incredible hardships to leave behind a complete record of strictly scientific observations, it must but be a matter of regret that the medical observers attached to the Rice Expedition should not have utilized their exceptional opportunity to better advantage.

In marked contrast to the Rice report are the results of an investigation by Dr. H. Wolferstan Thomas on the Sanitary Conditions and Diseases prevailing in Manao during the period 1905-09, being the Fifteenth Expedition of the Liverpool School of Tropical Medicine, and made available to me through the courtesy of the International Health Board. The practical utility of a thorough analysis of climatological morbidity data for Manao and other localities of the Amazon river basin is clearly shown in the discussion of the inverse correlation of malaria, rainfall and wind force in my "Plea and Plan for the Eradication of Malaria Throughout the Western Hemisphere." The immense economic importance of malaria eradication to this section of South America is emphasized in a monograph on "Rubber in Brazil," by A. J. de Souza Carneiro, who points out that "the States of Para and Amazonas and the Acre Territory would long since have reached a population of 3,000,000 had it not been for the havoc that malarial fever and diseases of the digestive organs worked on a population that without even elementary comfort or medical assistance, risked their lives in regions so inhospitable." As a model of a brief but strictly scientific report on this area reference may be made to the "Notes on the Alto Rio Branco, North Amazonas," by R. H. Blake, in the *Journal of the Royal Geographical Society*, May, 1916. See also the preliminary report of the Irvin Expedition of the Indiana University to Peru and Bolivia, *Science*, August 2, 1918.

The results of a conference on hospital standardization have been issued in the form of a bulletin of the American College of Surgeons (Chicago, 1917). These were followed by a bulletin dated March, 1918, on Standards of Efficiency, in connection with which it is pointed out that "Ultimate results of hospital standardization are a matter of evolution, of good will, of honesty and fearlessness in facing facts, of team work and of patience." Conceding that widely varying conditions make hard and fast standards quite impossible, it is said, however, that "Remembering these things, there is nothing insurmountable in the task." The minimum standards include a recommendation regarding case records, summarized in the statement that "The hospital keep in a systematic manner case records of its patients, together with a convenient summary of each case, and that it utilize these records in analyses of its medical and surgical efficiency." Most of the hospital reports issued at the present time, at least as regards the statistical data, are practically useless for scientific purposes. Efforts at standardization through special committees of the American Public Health Association and of the American Hospital Association have led to no material improvements in a deplorable situation. The essential function of a hospital is, of course, the treatment and care of patients, and prior consideration must be given to matters of equipment, medical staff, business management and even financial accounting, but there is no justification for the general disregard of the requirement that the hospital experience data should be made available for scientific and general practical purposes. In such an otherwise admirable work as "The Modern Hospital," by Dr. John Allen Hornsby, the subject of proper morbidity record-keeping and the urgency of uniformity and standardization are entirely omitted. Among the efforts to bring about an improvement, the most promising is the work of Dr. E. A. Codman (*Boston Medical and Surgical Journal*, August 30, 1917), subsequently enlarged upon in an exceptionally useful study of hospital efficiency, as demonstrated by the case reports of the first five years of a private hospital. Of much value also is a monograph on the care of hospital records, according to the methods of the Massachusetts General Hospital, by Grace Whitney Meyers, a second edition of which was issued in 1915.

In recognition of the need for morbidity statistics of general hospitals and other institutions for the care of the sick, the U. S. Public Health Service in 1917 published a brief report by Mr. Edwin W. Kopf, in which the need for a Federal voluntary registration area for hospital morbidity statistics is emphasized and sustained by observations derived from a reasonably thorough analysis of available infor-

mation. Mr. Kopf observes that "The registration and statistical analysis of hospital morbidity data in a Federal voluntary area can be accomplished if a sufficient number of representative general and special hospitals will agree (a) to adopt in common a nomenclature and classification of diseases and conditions; and (b) if they will transmit to a central Federal agency detailed tabulations of their sickness experience upon a set of uniform reporting schedules." Mr. Kopf also points out that "hospitals will be more ready to agree to enter a voluntary registration area if such action will not seriously disturb present record routine or run up clerical costs." The experience which was had by the Committee on Uniform Hospital Statistics of the American Public Health Association, however, proved conclusively that the problem is practically hopeless without active Federal coöperation. Even so apparently simple a question as the adoption of a more satisfactory uniform disease nomenclature was brought nearer to a final solution only after a conference participated in by Federal departments having to do with medical and related matters, and civilian agencies, including life insurance companies, all of which unanimously agreed to have such a new and thoroughly standardized nomenclature of diseases prepared by the Division of Vital Statistics of the U. S. Census.

It needs, therefore, no further arguments to sustain the point of view that the whole subject of hospitals and institutions demands a broader interest on the part of the Federal Government through the U. S. Public Health Service. The experience gained by the investigations, for illustration, of the committee appointed to inquire into departments of health, charities, and Bellevue and allied hospitals in the City of New York, 1913, as well as through inquiries into the more specialized aspects of the problem, such as standardization of social work in hospitals, a preliminary discussion of which has been contributed by Miss Ida M. Cannon, R. N., N. Y., 1918, the problem of the small-community hospital, than the solving of which there is perhaps no more pressing need to-day in the furtherance of rural health and hygiene, and, finally, the county hospital, which was made the subject of a special discussion by the Commonwealth Club of San Francisco, with particular reference to the needs of California, emphasizes the necessity for an active and sustained interest on the part of the Federal Government, to be realized only through a thoroughly coöordinated Federal and State health administration.

PUBLIC HEALTH AND HOME NURSING

There is an urgent demand throughout the country for a more effective organization of public health and home nurses on the basis

of existing organizations, chiefly the National Organization for Public Health Nursing and the Home Service Section of the American Red Cross. As observed in a discussion on The Public Health Nurse in its relation to the work of the Children's Bureau, "The first step in the organization of adequate public health nursing service is to form a strong local committee, representing the local health department, the medical profession, the women's clubs, etc." In other words, public health and home nursing, whether on a paid or a voluntary basis, must be, as far as practicable, coöordinated to the varying needs of the local health administration. The urgency of a more intelligent coöperation became especially apparent during the epidemic of infantile paralysis in 1916 and the influenza-pneumonia epidemic of 1918. In consequence of the war activities of the American Red Cross a large number of women have been trained in home nursing, whose future services should not be lost to the nation. There is also an urgent demand for better training in the essentials of first aid as applied to the needs of industry and as perhaps best illustrated by the practical results which have been achieved in the organization of first aid courses in mining under the direction of the U. S. Bureau of Mines in coöperation with the American Red Cross. Of considerable promise as regards the near future is the medical-unit plan of the Aetna Life Insurance Company, in successful operation in a number of industrial districts, one of which has been described in *Hospital Management*, December, 1918. The pioneer insurance company to undertake home nursing on a large scale is the Metropolitan of New York, the plans and methods of which have been worked out with admirable thoroughness under the direction of Dr. Lee K. Frankel. As a basis for a more effective organization and active coöperation of private and public agencies, a survey is required, more or less in conformity to the plan of Miss Helen F. Boyd, as described in her report on Public Health Nursing in Connecticut, issued by the State Department of Health, 1918. Among other recommendations, Miss Boyd includes the following:

1. There shall be appointed a public health nurse who shall be directly responsible to the State Commissioner of Health. She shall be a graduate, registered nurse with experience in public health work.
2. Her duties shall be: (a) To encourage communities to organize for the support of public health nurses where such an organization has not before existed. (b) To advise with associations or individual nurses already in the field as to the development of their work, especially in the line of child-welfare and tuberculosis work.

3. The first nurse as her work increases shall be given assistants, with the same qualifications for the work as she has, who shall, if the work justify it, be four in number, one for each of the sanitary districts. The first nurse shall supervise and direct the work of the assistants.

MORTALITY AND MORBIDITY STATISTICS

The section on mortality statistics is not intended to include the work of the Division of Vital Statistics of the Census Office. It may safely be assumed as a foregone conclusion that the most serious objections would be raised against separating the Division of Vital Statistics from the Division of Population Statistics of the Census, both of which are closely interrelated in the primary object of disclosing the population and mortality tendencies of the nation, not only at different censal periods but during intercensal years as well. There are, however, other practical objections, among which perhaps the most important is the valid reason that the mortality data of the nation are, after all, the only true index of health progress in certain well-defined directions, and that the control of the evidence relating to such progress should not be intradepartmental but extradepartmental, in so far as that can possibly be arranged for. No one has ever raised convincing objections against the office of the Registrar-General of England and Wales not being directly connected with the department of the Medical Officer of the Local Government Board, and while suggestions have been made for the transfer of this department to the proposed "Ministry of Health," the situation in England is, after all, essentially different from what it is in this country. The registration of diseases is quite another matter, since the morbidity is a much more correct current index of health and well-being than the mortality, even from strictly communicable or transmissible diseases. It may be said in this connection, however, that unless the existing methods of weekly abstracts of sanitary reports are materially perfected and improved in important details it would seem best to discontinue their publication entirely. This conclusion, however, does not apply with the same force to international morbidity statistics, where imperfections are more excusable. To publish statistics for one week and not for another and to leave gaps which frequently afterwards can not be bridged is to impair materially the true value of the returns under consideration, so that if they can not be improved they had better be done away with. Attention, however, may be directed on this occasion to the admirable plan worked out by the Division of Vital Statistics of the Census Office, under which weekly reports for some fifty repre-

sentative cities of deaths from all causes and separately for ages under one are transmitted by wire and made public in a consolidated form through the Associated Press within three days after having been assembled. The value of this method was particularly emphasized during the recent epidemic of influenza and pneumonia.

MISLEADING SICKNESS STATISTICS

The ascertainment of the true rate of sickness in a given community or in a selected group of persons is a much more difficult task than the determination of the approximate death rate. Death is a strictly definable term whereas the terminology of disease defies precise analysis.* Earlier inquiries into the subject of disease prevalence bear in some respects evidence of greater intrinsic merit than more recent efforts in this field of statistical research. Regardless of decidedly better opportunities for statistical and medical investigation, the same conclusion applies to sanitary surveys, which only too frequently are made without the required qualified knowledge of the underlying technical principles and the most accurate methods of statistical inquiry. There has, for illustration, been no more comprehensive investigation into the sanitary conditions of the City of New York than the report made by the Council of Hygiene in 1865. By way of contrast the so-called "Sickness Census" of the Framingham Community Health and Tuberculosis Demonstration is an excellent illustration of the serious shortcomings of present-day superficial methods of inquiry. Thus, for illustration, it is said in this report that "It is interesting to note that the number of individuals per family recorded in the census (4.52) is a higher rate than the average for the community at large as based on the 1915 census (4.49)." There, of course, is nothing interesting

* There is much need of a more adequate and strictly scientific treatment of the subject of death and the duration of life, physiologically considered. Among the more important discussions are the chapter on death by James Ritchie, in the treatise on "General Pathology," by Pembrey and Ritchie, and a brief discussion by Adami in the text-book of pathology by Adami and McCrae. The discussion of death and particularly of the lesions leading to sudden death, as determined by post-mortem, in the text-book of pathology by Delafield and Prudden, is of exceptional value. The subject, of course, has quite a literature, which has been admirably summarized in an article on "Death," with special reference to physiological variations, by W. H. Howell, including a long list of references, in the Reference Hand Book of the Medical Sciences, vol. iii, 3d edit., New York, 1914. To those who are concerned with the so-called "Causes of Death," the recently published work on "Causation," with a chapter on belief, by Charles A. Mercier, M. D., London, 1916, will prove of the very greatest value. This work includes an extended discussion of the so-called "causes of death" on the basis of a well-reasoned theory of causation opposed to the doctrines of John Stuart Mill. See also in this connection two exceptionally valuable articles on "The Causes of Diseases," by Ernest S. Reynals, M. D., reprinted in the *Scientific American Supplement* for February 16 and February 23, 1918. Of additional value is the treatise on "The Origin of Disease," especially of disease resulting from intrinsic as opposed to extrinsic causes, by Arthur V. Meigs, Philadelphia, 1897, and the earlier work on the "Causation of Disease," with an exposition of the ultimate factors which induce it, by Harry Campbell, London, 1889. In these and many related matters only a thoroughly equipped research department can render the exacting scientific aid required, if results of far-reaching value are to be forthcoming. Such research may extend over many years and the results for a long time may be both costly and disappointing.

or suggestive in a differential percentage which disappears if the figures are reduced to the first decimal; yet the conclusion is drawn from a difference of only 0.03 per cent. that this "is probably due to the fact that the census covered a higher percentage of adjacent urban population than of pseudo-suburban village and rural population." The pretense of knowledge implied in this assertion is as regrettable as the obviously erroneous conclusion itself.

In the same investigation the terms "health census" and "sickness census" are used interchangeably, although, of course, neither one is precisely the equivalent of the other. The "census" itself is made to include diseases as such as well as conditions contributory thereto, or resulting therefrom. The term "disease" is not defined, but the request in the house to house inquiry for information was for either the disease *or the cause* of sickness. Clearly upon such crude assumptions no satisfactory medical, social and economic results can possibly be secured. By combining all diseases and conditions, the group defined as "sick" is made to include such cases as "run down," "nervousness," "cold," and "old age." The analysis is not by sex, so the correct incidence in proportion to the population cannot be determined, since the total sickness rate in the population is misleading when maternity cases or puerperal affections are included in a return for both sexes combined.

Of much more practical value are the sickness surveys of the Metropolitan for a number of representative cities. The sixth community survey of this company is for the principal cities of Pennsylvania and West Virginia, including special observations on the disease liability of coal miners, iron and steel mill employees, and females in coal miners' families. Of value, also, is a Health Census of Chelsea Neighborhood, New York City, made jointly by the Metropolitan and the Chelsea Neighborhood Association. Of still greater value is the sickness survey of Dutchess County, New York, by the State Charities Aid Association. Those who are employed in connection with inquiries of this kind are, however, generally wanting in the required technical qualifications. Sickness surveys, like sanitary surveys or industrial surveys, demand an exceptionally high order of trained intelligence. Henry W. Rumsey, in a series of essays and papers on "Some Fallacies of Statistics Concerning Life and Death, Health and Disease," London, 1875, forcibly directed attention to the numerous fallacies inherent in the use of crude data, most of all when the underlying physical and pathological facts and conditions were but imperfectly understood. Rumsey was one of the first to suggest the collection of sickness statistics, observing in an address delivered as early as 1859 that "a

public registration of sickness would provide a natural and obvious means of correcting mere statements of apparent results, often certified as the 'cause' of death on a cursory review of the dying or the dead." Limiting himself at the time to the registration of disease in poor-law institutions, hospitals, etc., he took occasion to point out, however, that "We may admit that even if all the diseases thus relieved and recorded were uniformly registered by competent authorities, a large proportion of sickness would still escape public notice, unless and until by the voluntary coöperation of medical practitioners the registration were extended to cases occurring in the higher and middle classes of society." In his volume of collected papers Dr. Rumsey refers to a final report of a committee of the British Medical Association, dated August 22, 1874, recommending to the Local Government Board the establishment of a national system of registration of diseases. Charles E. Paget, some twenty years later, published his classical essay on "Wasted Records of Disease," in which every question pertinent to the present consideration was raised, though left unanswered during the twenty years which have intervened since Paget's eloquent appeal was made jointly to the medical profession and the general public. The time has come when this demand for more trustworthy information concerning the prevailing rate of sickness can no longer be disregarded by those in public authority or by the members of the medical profession engaged in private practice. The data are required for social and economic purposes as a basis for practical measures of urgent reforms in the conditions which affect the life and the well-being not only of our wage-earners, but of the population at large.

Contrarily to the assumption that useful data of this character would be forthcoming under compulsory health insurance, the experience which has thus far been had conclusively proves that the information secured would be of decidedly limited intrinsic value.* Since a system of compulsory health insurance itself is largely responsible for a considerable amount of malingering,† alleged sickness or exag-

*For a full discussion of the important question as to whether the statistics derived from compulsory sickness insurance are of intrinsic value and useful for public health and actuarial purposes, see the treatise by Wm. A. Brend, M. D., on Health and the State (p. 305, et seq.). See also his observations on the practical impossibility of correlating the provisions of the Insurance Act to the improvement of insanitary conditions on the basis of sickness experience data (p. 249, et seq.).

†The most important works on malingering, with special reference, however, to the English experience under Workmen's Compensation and National Health Insurance, are the following: *Malingering or the Simulation of Disease*, by Jones and Llewellyn, London, 1917; *Malingering and Feigned Sickness*, by Sir John Collie, M. D., London, 1917; there is also an earlier work on malingering by Sir John Collie, issued in 1913, which is useful as emphasizing the increase in the tendency to malingering during recent years. A convenient summary of the evidence is included in the treatise on Health and the State by Wm. A. Brend, M. D., New York, 1917. See also my discussion of this question in *Facts and Fallacies of Compulsory Health Insurance*, 1916, and the *Failure of German Compulsory Health Insurance*, New York, 1918, in which the evidence is derived from German sources and is practically brought down to date.

gerated slight affections, the statistics secured under an experience of this kind are more generally misleading than scientifically conclusive. The practical solution is a simple requirement under which all authorized medical practitioners contribute the results of their individual experience to a collective investigation under the control of the state. A concrete illustration of what may be achieved in this direction, even on a purely voluntary basis, is the Collective Investigation Record of the British Medical Association, including contributions by Prof. Humphry, Sir W. Gull, Sir James Paget, and others, and comprehending such important questions as the communicability of phthisis, a report on acute pneumonia, chorea, acute rheumatism, etc. What was possible on a voluntary basis in 1883-84 should certainly be feasible, if necessary, on the basis of a statutory requirement at the present time.

MODERN METHODS OF HEALTH EDUCATION

It is possible on the present occasion to make only a brief reference to the suggested section on health education and health propaganda. The most serious objections lie against any form of ill-considered or superficial publicity, which while relatively rare is nevertheless sufficiently common to suggest an urgent word of caution. A single serious error or ill-considered statement of advice is likely to do more harm to a health organization, whether Federal, State or municipal, than all the good attained through a mass of irreproachable public utterances. The utmost caution is called for and only what is of real value should emanate from a Federal or a State health department, irrespective of the public clamor during a period of exceptional excitement, such as all are familiar with who passed through the epidemic of infantile paralysis or the still more recent one of influenza.* There is nothing more menacing to a public health service than a publicity department which

*The danger of unwise publicity was never more forcibly illustrated than by the ill-advised action on the part of the Board of Health of the City of New York during the infantile paralysis epidemic of 1916. The public has a right to a statement of the facts and it is equally of right entitled to be protected against the dissemination of wrongful and misleading information, conjectures, theories and mere guesswork opinion on the part of those who are assumed to know. As well said in an editorial in the New York Sun (July 30, 1916) under the title of "A Panic in the Name of Sanitation," "We believe the authorities and particularly the Department of Health have contributed unnecessary hardships to the situation that exists and that if it does not make a radical change in its methods it will create in the name of sanitation a panic whose effects will be more terrible than anything the city has to fear from the mysterious disease to which attention is now given." Much the same criticism may be brought against the publicity mismanagement of the epidemic of influenza in the city of San Francisco, where a well-known writer on public health questions, with no thorough knowledge or understanding of the problem, urged in the most emphatic terms the universal use of the face mask on the one hand and of a but recently discovered vaccine on the other. Impartial investigations subsequently proved that the relative case rate and fatality had been lower in Los Angeles where the face mask was not adopted, and that in the opinion of the foremost authorities on vaccine treatment no safe reliance can be placed upon the use of any influenza vaccine known at the present time for either preventive or curative purposes.

considers it its duty to issue a continuous stream of bulletins, press notices, etc. It is absolutely unavoidable under such circumstances that, sooner or later, information or advice of an untrustworthy character is given publicity. The public has a right to be protected against the dissemination of ill-considered information or so-called "health news," which may be, and often is, seriously misleading or needlessly alarming. The field of health education has been enormously expanded during recent years, particularly through the coöperative efforts of health promoting agencies such as the American Public Health Association, the National Tuberculosis Association, the American Society for the Control of Cancer, the National Safety Council, the Association for the Prevention of Infant Mortality, etc. More active governmental participation in the work of these associations would materially aid in the highest attainable degree of success on the part of the Federal and State health administrations. In addition thereto, of course, the annual and special conferences of State and Territorial health authorities, under the auspices of the Federal health service, fulfill a most important function. There can be no thoroughly effective coöperation between Federal and State health authorities, unless the officials concerned know one another and know one another well.

Of the many national organizations and activities all of which are more or less in the nature of health promoting agencies, aside from those previously referred to, the following are of special importance: The Eugenics Record Office, Cold Spring Harbor; The International Health Board of the Rockefeller Foundation, New York; The American Home Economics Association, New York; the American Social Hygiene Association, New York; The National Association for the Advancement of Colored People, New York; The National Board of the Young Women's Christian Association, New York; The National Child Labor Committee, New York; The National Child Welfare Association, New York; The National Committee on Mental Hygiene, New York; The National Committee for the Control of Blindness, New York; The National Conference for Social Work, Chicago; The National Organization for Public Health Nursing, New York; The Playground and Recreation Association of America, New York; The Race Betterment Foundation, Battle Creek; The Red Cross Institute for Crippled and Disabled Men, New York; The Russell Sage Foundation, New York; The International Young Men's Christian Association, New York; The Association of Industrial Physicians and Surgeons, Boston; the American Posture League, New York, and The American Physical Education Association, Springfield, Mass.

There are, of course, a number of others, working, however, chiefly in a more restricted field. Regardless of the viewpoint that there is much duplication of effort, the fact requires to be kept in mind that in what is practically a new branch of social work the strong initiative and the fixed purpose which lie back of each and all of these organizations are factors of the utmost importance in the attainment of early results of far-reaching value.*

MILITARY AND NAVAL HYGIENE

No extended reference to the self-evident coöperation of the Federal health service with the sanitary and medical departments of the Army and the Navy, as well as with the health authorities of our non-contiguous or insular possessions, seems necessary. It is a self-evident conclusion, of course, that such coöperation in the future should not only be more active, but should follow much more carefully considered lines, based upon our war experience, than has heretofore been the case. Whether it would be necessary to make special provision for such coöperation in a separate section is debatable. Any particular question arising could probably be taken care of by the section on health administration and organization, which should be made to serve all of the more or less general administrative and coöperative functions.

The military medical administration has naturally very much expanded in consequence of the war. Its general principles have therefore been much more carefully worked out, as a matter of necessity, than has been found essential or possible on the part of civilian health organizations. A clear distinction is drawn by Joseph H. Ford, M. D., Colonel, Medical Corps, U. S. Army, between the real administrative work of the Army medical organization, which is effected by orders, circulars, memoranda, letters of instruction, etc., and the reports and returns rendered to superior officers, which merely indicate to higher authorities how such methods have failed or succeeded. He properly points out a fact which is frequently overlooked, that reports are of less value than results, and he therefore strongly approves of a laudable disposition to simplify military official procedures, reducing letters, reports and returns to a minimum and replacing them as far as possible by man command, conversations and by frequent

* For a full discussion of the question of effective coöperation in line with the future possibilities of reorganized public health activities, see a paper on "The Present Condition of Public Health Organizations in the United States," by Prof. Selskar Gunn, American Medical Association, Chicago.

inspections. This observation must not be construed as an effort to minimize the practical value of reports intended to serve not merely the purpose of an accurate accounting of services rendered, but also as a basis for subsequent historical inquiries, the practical value of which is best illustrated by the classical work of Charles Creighton, M. D., on the "History of Epidemics in Britain"; in fact, all epidemiological investigations rest largely upon historical inquiries and the intelligent analysis of a mass of involved statistical and other data.

Annual or special reports on health and mortality are frequently prepared by subordinates not sufficiently familiar with the facts, which require presentation as a matter of routine official procedure. The classical reports of Dr. William Farr, on the mortality of the people of England and Wales, owe their intrinsic and permanent value to the fact that they were the work of Dr. Farr himself and not of a subordinate. The same conclusion applies, for illustration, to the early reports of the State Board of Health of Massachusetts, particularly to those of Dr. Henry I. Bowditch and Dr. Samuel Abbott. The centennial discourse of Dr. Bowditch, on Public Hygiene in America, delivered before the International Medical Congress held in Philadelphia in 1876, still ranks as the most useful work of its kind accessible to the student of the public health administration of this country. Efforts at standardization and unification in the rendering of annual, monthly and weekly reports of Federal, State, and local health departments have heretofore failed entirely, and largely so because of the absence of a clear recognition of the practical utility of such reports when properly applied to the solution of the more pressing needs of sanitary administration. The tendency of recent years has rather been in the wrong direction and the reports now rendered are less useful than formerly and often unreasonably delayed in publication, if printed at all, as required by law. The public is of right entitled to a full accounting in all matters concerning the health administration of the community, in the same manner in which such an accounting is rendered by the military and naval branches of the Government. The work of Colonel Ford is an admirable presentation of practically all that concerns an efficient public health administration, including observations on the required coöperation with other governmental and civilian health agencies and organizations. The work also includes a reprint of the general regulations governing the sanitary administration of the Panama Canal Zone, issued originally under the authority of Major-General W. C. Gorgas.

ADEQUATE COMPENSATION OF HEALTH OFFICERS

Each and every section of the Federal, State and local health administration should be in charge of a person thoroughly qualified for the position, free from all political influence or interference. The technical sections or departments should be in charge of specialists of reputation as a guarantee of efficiency in service in matters which are not generally within the full understanding of the public. The scale of salaries and allowances should be liberal, for if we are really in earnest in our assertions that the health of the nation is a matter of paramount concern to all the people, we must be willing to pay the price. In the long run a thoroughly well-paid and contented official staff will prove the best possible investment as a guarantee against the miscarriage of effort in a field of administrative activity in which failure may prove disastrous to the community.

An admirable analysis of the earnings of health officers and their respective employment on a part-time and on a full-time basis has been prepared for the information of the American Public Health Association by Dr. Lee K. Frankel, the president-elect of the association. Out of 417 health officers 48.76 per cent. earned less than \$1,000 per annum. Of the 417 officers making returns only 153 were employed full time, the remainder of 264 being employed part time and generally at salaries of less than \$1,000. Of the 417 communities represented by the inquiry 101, or 24.2 per cent., required the health officer to be a physician with public health experience; 170, or 40.8 per cent., physicians without public health experience; in 58 cases public health experience of a non-medical character was sufficient, and in 88, or 21.1 per cent., neither medical nor public health experience was considered necessary. There is therefore an abundance of room for improvement, on the one hand, in the raising of the technical qualifications for the status of a health administrator, and as a condition precedent there is the necessity for more adequate compensation as an inducement to entrance into a field which is now in a fair way of being recognized as a profession.

STATE HEALTH ADMINISTRATION IN CALIFORNIA

The question now arises as to how far such a plan as is here suggested, subject to change in matters of detail, would meet State requirements. In view of the wide variations in State health purposes certain modifications no doubt would be necessary, in some directions possibly an enlargement of the function suggested and in others a very material abridgement. In the main, however, the general plan and scope of the proposed organization should be found feasible

of adoption by the several States and, of course, subject to further modifications, by the larger municipalities. The status of any Federal health organization will probably always remain chiefly advisory and corrective. This conclusion, of course, does not apply to international and maritime quarantines or to the hygienic laboratory or to research work. The real health *administration*, in conformity to our constitutional limitations, must, after all, remain, and properly so, a State or local function. By way of illustration, a very brief reference may be made to the State health organization of California. While apparently the budget is fairly liberal, it is entirely inadequate to the purpose, considering the vast area of the State and the wide variations in local conditions and special needs. In the Sacramento Valley, malaria is a problem of the first importance, in southern California it is the indigent tuberculous patient, in the Mother Lode region it is miners' hookworm disease and possibly miners' phthisis, while in the city of San Francisco it is, in a rather restricted sense, of course, the problem of Oriental mortality, tropical diseases, leprosy,* etc. The state health organization rests upon a district system, which provides entirely inadequate financial resources, under a single health officer, for an area which may be larger than the combined territory of several New England States. Under the old conception of emergency service during epidemics, or sanitary after-care, the present method is probably as satisfactory as any. Under the proposed plan, however, the State would have to thoroughly reorganize itself and establish a health policy paramount to every financial, commercial or even sentimental consideration.

California offers at the present time the most promising field for far-reaching reforms in State and local health administration. California within the boundaries of a single state sovereignty includes practically all of the various environmental conditions which more or less determine both the average and the maximum duration of human life. The latitude is from 33° N. to 42° N. The area is almost 160,000 square miles, or equal to the combined area of the New England States, New York and Pennsylvania. The State has a Pacific coast line of nearly 800 miles and a range in elevation from sea level to 14,500 feet. The islands of California include the practically barren Farallons and others quite uninhabitable, as well as the beautiful and

*Leprosy is of comparatively rare occurrence in this country, but apparently the disease is on the increase. It is, therefore, most gratifying that a congressional appropriation should have made the sum of \$250,000 available for the establishment of a Federal leprosarium, which, at the outset at least, is intended to care chiefly for cases of an interstate or international character. Leaving out of consideration the State of Louisiana, nearly all of the leprosy cases in this country have been contracted in foreign countries or in the non-contiguous possessions of the United States. Of all the transmissible diseases, leprosy is perhaps the one which, by common consent, is most entitled to Federal consideration, as a national health problem of the utmost serious concern.

fertile Santa Cruz and Santa Catalina. The normal range in temperature is from 12° below zero to a maximum of 120° and more in the Death Valley. The range in rainfall is from 3 inches in the extremely arid region of the south to a maximum normal of 113 inches per annum in the extreme north. At San Diego the sun shines nearly every day throughout the year, but at Eureka the number of days with sunshine is only about 100. Wide variations are met with in wind velocity and the frequency of fogs. Seismic disturbances are common in some sections, and the State has the unique distinction of having the only active volcano in the United States.

California has practically every variety of soil from the most fertile to the absolutely unproductive. In the area immediately adjacent to San Francisco fifty different types of soil have been clearly differentiated, from the fertile sandy loam and adobe to dune sands, tidal marsh and river wash. Even more varied are the soil conditions in the great Sacramento Valley, the extreme length of which is approximately 150 miles. Seventy-three soil types have been identified in this area, ranging from widely varying loams and clays to tidal marsh, muck and peat. The relation of such soil variations to health and longevity and to special disease prevalence has thus far been only approximately determined and hardly to much practical purpose. The same conclusion applies to the wide range in the quality of surface and ground waters, although a large amount of useful information has been brought together on this subject in the water supply investigations of the U. S. Geological Survey. The same department has also issued a valuable report on the Springs of California, which emphasizes what is practically as yet an almost undeveloped natural resource of the utmost value in the more scientific treatment of disease.

The health-promoting value of the California desert regions has not been made the subject of a thorough investigation. The extraordinary results attained in certain localities, as for illustration, at Indio, in the Colorado Desert, are suggestive of much more far-reaching beneficial results when the more or less involved facts of physiography, climate, geology, soils, etc., are better understood. As encouraging evidences of progress, attention may be directed to the reports of the Bureau of Soils on the Indio area and of the U. S. Geological Survey on the Ground Waters of the Indio area, with a sketch of the Colorado Desert and a supplementary report on "Some Desert Watering Places in Southeastern California and Southwestern Nevada," by Walter C. Mendenhall, Washington, 1909.

Aside from the important physical factors which more or less determine the health of the State, there is an equally wide range in

the racial distribution of the population and its social and economic conditions. In some sections certain racial elements predominate, such as the Portuguese, the Mexican, the native Indian, the Chinese, the Japanese and even the East Indians and Koreans. All of these races have their own special obscure mortality problems and exceptional disease predisposition or resistance, as to which additional information would be of real value in the more scientific practice of medicine.

The range in the industries of California is extraordinary and inclusive of practically every important occupation involving special industrial hazards, such as the mining of every variety of metal, from gold and lead to copper and quicksilver, and of the non-metallic substances, from salt and borax to cement. There is every variety of lumbering, from the sugar pine forests of the high Sierras to the giant redwoods of the northern coast counties, with all the subsidiary wood-working industries, from ship-building to the manufacture of matches. The smelting industries are thoroughly representative, with all their peculiar problems of dust and fume control, not only of immediate concern to the employees, but also to the population at large living in areas adjacent to smelting plants. The Selby Commission may here be referred to as an excellent illustration of the scientific resources available to the Government when utilized on a thoroughly well-considered plan of coöperation with private interests.

The agricultural and horticultural development throughout the State includes every variety of local conditions, artificially modified where necessary by extensive systems of drainage and irrigation. No other section of the United States illustrates in such a remarkable manner the soundness of the conclusions advanced by the late Prof. George P. Marsh, in his treatise on "The Earth as Modified by Human Action," and from another viewpoint by Elsworth Huntington, in "Civilization and Climate." Only those who are familiar with the truly enormous natural obstacles to be overcome in effective methods of drainage and irrigation can realize the true significance of the new mortality problems which result from defects which at the outset are relatively insignificant, but which may prove serious in their ultimate influences on the life and health of the people. No other diseases better illustrate the force of this observation than malaria and typhoid fever.

California presents every contrast of riches and poverty and of physical well-being and chronic ill-health. For many years the State has attracted invalids from other sections, particularly those afflicted with tuberculosis and other chronic respiratory diseases. No other

disease, unless it be leprosy, manifests more clearly certain important interstate aspects of Federal Health Administration. The investigations which have been made by Dr. Sweet of the U. S. Public Health Service on the problem of the indigent tuberculous patient in the Southwest may be referred to as evidence of an increasing interest on the part of both the Federal and the State health authorities in a problem the national importance of which has heretofore not been recognized.

In no other State, therefore, it would seem, are the conditions more ideal than in California to justify the undertaking of a thoroughly reorganized State Health Administration on the basis of new principles and inclusive of new functions essential to the attainment of decidedly better results. No State is more progressive and more willing to meet the required expense to attain the highest ideals in the proper sphere and function of every branch of the State government. California has three great universities, adequate medical schools and clinical facilities, and numerous well-managed public institutions, all useful for the purpose of sustaining a thoroughly well-worked-out plan for a modernized health administration such as is here proposed.

How much has been achieved within a comparatively short period of time is best illustrated by the gratifying success of the State Land Colony at Durham, which in practically all the details of its administration rests upon the scientific advisory assistance of the University of California. This work which has been carried forward to such a successful termination by Prof. Elwood Mead, the distinguished authority on irrigation, gives every promise of serving as a model to other sections of the country, even though the plan may not prove feasible of universal adoption. What has thus been achieved in the realm of agriculture should be equally possible in connection with efforts to improve health and physical well-being. It is to be hoped that the executive officers of the State Land Colony will see their way clear to initiate a practical method of health supervision, including physical examinations, medical assistance and institutional treatment in conformity to all the knowledge available on these subjects at the present time. If this suggestion could be adopted the State Land Colony would only carry into further practical execution the method so successfully worked out in behalf of the students of the University of California, who for more than six years past have been under qualified medical supervision, which has been provided for at minimum expense, and without the pretense of social insurance, including all that must be considered essential to reasonable medical or surgical needs.

STATE HEALTH ADMINISTRATION IN NEW MEXICO

The State of New Mexico may serve as another illustration. At the present time it may safely be asserted that the State is not only without a State health organization, but not one of the principal cities or larger communities has a thoroughly satisfactory local health board. The registration of deaths is not enforced. The people of the State of New Mexico are of right entitled to a progressive health policy. The health of this State is not merely a matter of local but of national concern as well, as best illustrated during the recent epidemic of influenza, on the one hand, and the problem of the interstate migration of tuberculous invalids, on the other. There are numerous special problems, such as the effect of altitude on health and its relation to the treatment of certain diseases, the proper and more effective use of medicinal springs, the morbidity and mortality of the Indian population, the special sanitary problems of the Mexican element, etc. None of these are receiving proper consideration at the present time. The State can not possibly hope to attract new residents proportionately to the practically unlimited opportunities for further economic development unless evidence is forthcoming of a well-considered State policy of a health administration more or less in conformity to the outline presented on the present occasion. The efforts which have been made by the New Mexico Public Health Association are deserving of the most liberal encouragement on the part of both the State authorities and the public at large.*

THE ADVISORY PUBLIC HEALTH COUNCIL

As essential to such a plan of complete reorganization it would seem that provision should be made in the case of the Federal Health Administration as well as in those of the several States, for an advisory council, rigorously limited to suitable expert ability. Such a council is urgently insisted upon in the proposed plan for a Ministry of Health for Great Britain. It has been recommended by the British Medical Association that such a council "should be appointed by the minister from nominations made by bodies recognized as having a special claim

*A special report has recently been prepared on public health administration in New Mexico, by Dr. J. W. Kerr, Surgeon U. S. Public Health Service. This report is an admirable presentation of suggestions more or less in conformity to present-day conceptions of public health administration, as chiefly conditioned by restricted police powers of the state. The report, however, includes suggestions for the investigation and control of diseases; the need for diagnostic laboratories, the sanitation of schools, public health engineering and public health educational work. The report concludes with the recommendation for the financial support of a State department of health limited to \$22,900, or on the basis of the present probable population of New Mexico equivalent to 5c. per capita. If the State of New Mexico were to begin with twice the sum, or, say, \$50,000 per annum, for the purpose of an adequate and really effective health administration, the resulting benefits to the people of New Mexico would be many times the amount suggested as a minimum by Dr. Kerr.

to representation. This claim should be based not on any supported vested interests, but on the ability of the bodies concerned to give expert advice on the subjects to be considered and to keep the minister in living touch with those bodies and classes of persons on whose coöperation the success of the new ministry would depend." Applied to the problem under discussion this would mean that the Federal health administrator, or the State health administrator, would attach to his office a body of experts recommended by associated activities, such, for illustration, as the American Public Health Association, the American Red Cross, the National Tuberculosis Association, the National Safety Council, the National Committee on Malaria, the American Association for the Study and Prevention of Infant Mortality, etc. Since the advisory services through the council would be individual rather than collective in the majority of cases in which such advice would be required, the membership of the council might be made relatively large. There should, of course, be representatives of the American Medical Association, the American College of Surgeons, the American Dental Association, the Mental Hygiene Association, the Social Hygiene Association, the Association of Pharmacists, The International Health Board, etc. There might even be representatives of related public activities, such, for illustration, as the American Statistical Association, the American Actuarial Society, the Association of Life Insurance Presidents, the U. S. Chamber of Commerce, the Association of Industrial Physicians, the National Industrial Conference Board, the National Association for School Hygiene, etc. Assistance might also be drawn from the membership of the different sections of the American Association for the Advancement of Science, the American Anthropological Association, etc. The spirit of active coöperation and the willingness to render voluntary services are so thoroughly diffused throughout this country that it may safely be held that whatever voluntary assistance would be required by the Federal or State health administration in the directions indicated would be forthcoming without any difficulty whatever.

TEACHING METHODS IN PUBLIC HEALTH

Of the foremost importance, however, is the establishment of a thoroughly well-organized School of Hygiene and Public Health, independent of, or in connection with, a large university providing abundant facilities for research work. Such a school should not be made to rest upon exclusively medical considerations. The new science of Public Health is essentially non-medical in its major

function of disease prevention and control. The problems of sanitary law and administration are almost exclusively non-medical, except in so far as medical considerations amplify local powers, such, for illustration, as those of quarantine officers, inspectors of nuisances, control of midwives, protection of infant life, employment of children, etc. In all of these matters legal, social and economic considerations take priority over those that are medical. The same conclusion applies to the supremely important question of a wholesome and abundant water supply, which is primarily an engineering problem. The determination of impurities or the required methods of mechanical or chemical purification, as well as the chemical and bacteriological examination of the water itself, all lie outside of the plan and scope of medical service, even in the broadest sense of the word. Equally conclusive are the facts regarding air, ventilation and heating. The ascertainment of the composition and physical properties of air, of air impurities and the making of air examinations, as well as the ascertainment of the quantity of air required for ventilation and the best methods by which the necessary quantity of air can be supplied, are primarily engineering questions, the practical solution of which has become a recognized branch of sanitary science. Even in such a restricted field as dust phthisis, the major portion of the required research work is non-medical. The most useful contributions which have been made to problems of ventilation and heating are those of mechanical engineers, rather than those of medical men.*

In the immense field of food control and the enforcement of laws against food adulteration, etc., the responsibility in the main rests

*For illustration, the report of the Departmental Committee appointed to inquire into the ventilation of factories and workshops is signed by Prof. John Scott Haldane and Mr. Edward H. Osborne, neither of whom, as far as known, is an active member of the medical profession. The reports of this committee rank as the most useful contribution to a subject which is of the utmost practical importance to persons employed under conditions which give rise to atmospheric pollution. The investigations of the commission included such widely different employments as clothing factories, boot and shoe making, laundries, bread and confectionery making, printing, file-cutting, textile factories, etc. Practically all the technical problems involved in the control of dust and the removal of fumes are non-medical and depend for their ultimate solution upon engineering considerations. It may be said in this connection that Mr. E. H. Osborne is the engineering adviser to the Chief Inspector of Factories and that if Mr. John Scott Haldane is a member of the medical profession, he was probably not appointed to the committee on that ground, but because of his preëminence in other fields of exacting scientific research. It may also be suggested to those who are interested in this question that a collection of illustrations of the methods of dust extraction has been compiled by Commander Sir Hamilton P. Freer-Smith, R. N., and published as a Parliamentary paper in 1906 (C. D. 3223). It is also suggestive that the Commission on Ventilation of the State of New York, of which Prof. C. E. A. Winslow was the chairman and Prof. Frederick S. Lee an important member, included, as far as known, only a single member of the medical profession, Dr. John Alexander Miller, the distinguished author of an important paper on "The Effect of Changes in Atmospheric Conditions upon the Upper Respiratory Tract." The work of Dr. Miller in this and other fields is an admirable illustration of the practical services which members of the medical profession, *if otherwise qualified*, can render the cause of improved ventilation and dust control in factories and workshops.

upon chemists and bacteriologists and not upon members of the medical profession. The same conclusion applies to the supervision of beverages, including the use or the abuse of alcohol. One of the most important recent investigations of the psychological effects of alcohol is the work of Raymond Dodge and Francis G. Benedict, experts in nutrition and psychological research, but, not as far as known, men of any experience whatever in the practice of medicine as a healing art.

Such subjects as clothing, exercise, soil, housing, schools and hospitals are largely problems outside of the field of medical practice.* While all of these questions have important medical aspects, the governing principles of right public action are in the main non-medical, or determined by other special physical, social and economic considerations. In the successful solution of each and all of these, medical men have in the past and are certain in the future to render much valuable and, in fact, indispensable aid, but it is held that for *administrative purposes* non-medical, scientific and business ability are more urgently needed for the attainment of urgently required practical health and general sanitary reforms.

Finally, such problems as scavenging and street cleaning, sewage and sewage disposal, and the disposal of the dead are largely non-medical, and so much so that it would seem a wrongful waste of opportunity on the part of a medical practitioner to give much time and thought to problems obviously essentially of an engineering or otherwise non-medical character. The same conclusion applies to the supervision and control of offensive trades or dangerous occupations, which within recent years have become centralized in the public administration of factory inspection on the one hand and safety engineering on the other.

With these facts in mind, it would, therefore, seem that a thoroughly efficient modern School of Hygiene and Public Health should rest upon different fundamental principles and a differently conceived plan of coöperation and coöordination than the recently established School of Hygiene and Public Health of Johns Hopkins University. The

*This observation, of course, must not be carried too far. Important contributions have been made to the scientific study of the effects of clothing upon health by members of the medical profession, and even more so, of course, to the larger problem of physical exercise. Among recent contributions, reference may be made to a paper on "The Influence of Clothing on the Surface Temperature of Infants," by Drs. McClure and Sauer, of Chicago, contributed to the *American Journal of Diseases of Children*. This paper presents an admirable analysis of temperature observations, etc., concluding with the statement that "At a room temperature of about 31° C. an infant clothed in the manner above described and under the conditions of our observations, approaches very closely the point where a heat loss by conduction and radiation is no longer possible. Our experiments indicate that such a state of affairs may be fraught with danger to the organism." Of value also is a rather interesting volume on "Dangers in Neckwear," by Dr. Walter G. Walford, London, 1917, including observations on the thyroid as affected by neck pressure; the importance of neck-room in growing children; the reasons why small ailments are often the beginning of a serious breakdown; etc.

Johns Hopkins School provides, it is true, courses leading to the degree of Doctor of Science in Hygiene and of Bachelor of Science in Hygiene, but the general implication is that priority of consideration is given to medical subjects as a prerequisite of graduation, leading to the degree of Doctor of Public Health. As yet, merely in the preliminary stage of organization, it is to be hoped that in its future development the School of Hygiene and Public Health will be made to rest upon a much broader plan of organized thought * than is at present the case, for though the teaching of effective methods of sanitary administration is paramount, it is given merely incidental consideration in the curriculum at the present time. The object rather seems to be to add a relatively small measure of public health education to a large amount of previous medical education, much, if not most of which, is absolutely useless for all public health purposes. There is no adequate provision for the teaching of sanitary law and public health administration in its hygienic, as well as in its medico-legal and more general aspects. There is also inadequate provision for the teaching of the principles and practice of ventilation and heating and of illuminating engineering, than which perhaps no branches of modern public health administration are of greater immediate practical importance. Considering the fact that an ever-increasing number of men and women are employed indoors and at occupations involving more or less physical and physiological strain, the question of adequacy of air and ventilation, freedom from exposure to injurious industrial dusts, proper methods of lighting and heating, are all paramount questions of public health administration. It would, therefore, not seem sufficient to include such important subjects as these under the general term of "physiological hygiene," and in any event the more practical engineering aspects of these particular branches of public health administration should be more clearly emphasized.

There should also be advanced teaching in all that has reference to town planning and housing. If diseases are to be effectively pre-

* The most important recent publication on this subject is a treatise on "The Organization of Thought" by A. N. Whitehead, F. R. S., Philadelphia, J. B. Lippincott & Co., 1917. The work is an indictment of modern methods of technical education and a convincing plea for drastic educational reforms. In the words of P. G. Nutting: "Especially in a time of crisis like the present, national welfare depends upon the greatest possible development and utilization of all its resources, particularly those of strength and skill. New experts should be constantly selected and trained. All the highest expert knowledge should be at the service of the nation for directing the best development, utilization and conservation of all national resources, material, intellectual, manual and financial. Organizations and individuals, as well as the nation as a whole, should have the help of systematic expert knowledge in bringing them up to their possibilities. A general and well-ordered application of the results of scientific research to the problems of the individual, the organization, the nation, and of the world would have incalculable effects. We are only beginning to apply organized knowledge in an organized way, but the desirability of increasingly doing this in the near future is urged." (*Science Monthly*, May, 1918.)

vanted, by the gradual elimination of the conditions which undermine health and shorten life, it is self-evident that priority of consideration must be given to principles and methods of housing hygiene, school hygiene, factory hygiene, etc., rather than to immunology and even advanced bacteriology, which, though essential in a course on hygiene and public health, are nevertheless of secondary importance to measures and means aiming specifically at the control of the environment and the removal of conditions inimical to life and health.*

There is no provision in the Johns Hopkins School of Hygiene and Public Health for race pathology, nor for tropical hygiene and sanitation, two extremely important branches of public health administration, broadly conceived on principles of prevention, rather than on those of quarantine and measures of correction after the fact. There is also no provision for physical anthropology, as the very basis of all that is required in modern health administration in connection with the physical examination of school children and of applicants for factory employment. The central thought throughout seems to be the quarantine control of infectious diseases and highly specialized branches of research work in connection therewith.

Nor is there adequate provision for sanitary engineering in the accepted sense. Simply as an economic problem, the most effective and satisfactory means of dealing with town and house refuse, sewage, sewage disposal, water and water supplies, the disposal of the dead, etc., are all questions of the first importance in an effective health administration, having for its main object the prevention of disease occurrence, rather than the control of contagious and infectious diseases subsequent to outbreaks in epidemic form.

It is somewhat encouraging, however, to meet with a better appreciation of the urgency of statistical knowledge and training in

* Of course, all of these subjects are of the first importance in the curriculum of medical schools, preparing students for both the practice of medicine and the administration of public health. The point raised here is that overemphasis is placed upon exceptionally exacting branches of science, rather in the nature of research than in that of administrative activities. The practical question as to the avoidance of infection is readily within the full understanding of a person of average intelligence, if the facts are set forth with clearness, as, for illustration, by Dr. Chas. V. Chapin in one of the Harvard "Health Talks"; but a full understanding, for practical purposes, of the whole question of infection and resistance requires an amount of mental concentration and special aptitude quite outside of the possession of the average graduate in general medicine or public health. A superficial knowledge of such subjects as the problem of virulence, inherited and acquired immunity, toxins and antitoxins, etc., is practically certain to lead to profound errors in public health administration, as best illustrated by the experience gained during the recent influenza epidemic. Since the course, at best, must be one of limited duration, it would seem that the education of the future health administrator should be concentrated rather upon practical than upon theoretical and upon non-medical rather than upon medical questions. There is much danger of superficial knowledge of highly involved medical matters being made use of to give ill-considered advice to the public, apparently demanded by urgent considerations. It would seem best to leave such matters entirely within the realm of the medical profession, or with those who as physiologists or pathologists, or otherwise, are concerned primarily with bacteriology, immunity, and the related sciences.

practical statistical analysis and interpretation. There is a lamentable lack of qualified ability among public health officers in this respect, although the use of statistical information has enormously increased during recent years. It is to be hoped, however, that no attempt will be made to introduce extensively the use of mathematics, although provision for what is called the "advanced statistical theory" is made in the curriculum of the Johns Hopkins School of Hygiene and Public Health. Regardless of the exceptional value of the application of mathematical principles to statistical analysis in connection with medical and public health problems for general purposes, such knowledge and methods are more likely to prove a hindrance than a help. There is only a limited field for actuarial mathematics and the new application of statistical methods, such as have been brought forward by the Galton Research Laboratory, etc. What is required, and most urgently so, is a better understanding of statistics in the more restricted sense, and of the use of standardized methods of record-keeping, tabulation and analysis. The same conclusion applies to more rational methods of graphic presentation. At the present time practically every health officer follows his own statistical ideas and there is in consequence a deplorable want of uniformity and lack of comparability in the results. The prerequisite technical and higher mathematical knowledge of a course in "advanced statistical theory" is generally not within the possession of the average applicant for admission to a School of Hygiene and Public Health, nor is there more than a remote possibility that such knowledge will ever be required for practical purposes in the performance of actual administrative functions in the efficient conduct of a Federal, State or municipal health service.*

PROPOSED NATIONAL AND LOCAL HEALTH CENTERS

The effective administration of public health depends in no small measure upon the proper housing of the health administration. With few exceptions the health organizations of the several States and

* As early as 1866 Dr. Wm. Farr, F. R. S., in his report on the cholera epidemic of England, made use of the mathematical theory to subject the so-called "zymotic theory" to a critical examination. In a similar manner, Sir Ronald Ross has applied mathematics to malaria research. Perhaps the best known is the combined research work of Elderton and Pearson in their essay on the "Relative Strength of Nurture and Nature" of the Galton Laboratory for National Eugenics, a subject preceded by a more extended investigation of the "Intensity of Natural Selection in Man," by E. C. Snow, M. A. Highly specialized research work of this nature must, however, be considered entirely outside of the practical field of a large majority of health administrators, concerned with the solution of problems of immediate public concern. The required preliminary training in higher mathematics will, as a rule, be found entirely too exacting to leave the necessary time for serious and sustained thought upon questions of administrative policy. In fact, it has been argued by no less an authority than Sir Wm. Hamilton that training in higher mathematics may prove harmful to intellectual and scientific pursuits of a more practical nature. The fact that higher mathematics have been found useful in the furtherance of highly specialized branches of biology and eugenics is not an answer to the question as to which subjects in a course on public health should be given priority for obvious reasons of public concern.

municipalities are inadequately housed and frequently disgracefully so. In numerous conspicuous cases the office conditions symbolize official indifference to sanitation rather than rigid conformity to ideal sanitary requirements. If modern civic pride insists upon the adequate housing of general governmental activities, this attitude has not as yet extended to the Health Department, although it is now quite generally observed in the case of court houses and public libraries. The progress which has been made in Federal buildings is also suggestive of the direction to be followed in the future housing of the Federal and local health administration. It would, however, seem decidedly preferable to assign to the health administration a separate building, the exterior and the interior construction of which should be in conformity to a thoroughly worked out plan of efficient coördination of essential functions as obviously most advantageous to the administration itself and the general public. The outside impression should at once convey the idea of a temple of hygiene rather than of any other branch of the Government, however important for public purposes. Certainly in the case of the Federal Government there is now the most urgent need for a new and thoroughly equipped as well as efficiently coöordinated separate building for the adequate housing of the U. S. Public Health Service. A standard type of architecture might be developed so as to accustom the public mind to the idea that the public health administration as thus housed typifies the ancient conception of a temple of hygiene or a house of health. In the case of municipalities and counties such a building might be constructed in a manner of providing not only for the central organization of the health administration, but also on the one side, first aid, dispensary, infirmary and hospital facilities, and on the other the necessary office facilities for the registration of births, marriages and deaths, the physical statistics of the growth and development of the juvenile population, and finally for the records of diseases and other data, as essential to a well coöordinated plan of public health administration. As thus conceived such a building would constitute the *health center* of the community and it might easily be provided with an auditorium for lectures on health and welfare contributory to the health educational propaganda efforts of the local health administration. By combining the administrative health functions with other essential auxiliary duties and health promoting efforts, the health center could be made the radiating source of all local health activities, both public and private, the thoroughly effective coöordination of which is never likely to be secured otherwise at the required minimum of time, labor and expense.

PUBLIC HEALTH LIBRARY, SANITARY INFORMATION AND STATISTICS

Effective teaching methods depend in a large measure upon adequate library facilities. There should be brought into existence a great national Library of Public Health Information and Statistics, including the graphic presentation of mortality and morbidity facts not only for the United States, but for all important countries of the world.* Such graphic illustrations should not, however, be limited to mortality and morbidity, but an effort should be made to correlate such information to climatological, pathological and other scientific data useful for the purpose. At the present time a vast amount of useful information is available only through general medical libraries which cannot possibly meet highly specialized practical requirements. In course of time there should be coördinated to such a library a Museum of Public Health more or less in conformity to the principles which govern in the arrangement and development of the American Museum of Safety. The methods of health instruction require to be made much more objective than is generally the case and special emphasis should be placed upon demonstrations of simple methods of sanitary surveying as absolutely essential to the development of rational plans of sanitary reforms. There is entirely too much reliance upon book teaching and insufficient attention to the urgency of personal contact with the actual facts of the sanitary and related sciences which require to be dealt with in every-day life. It has been said that the three fundamental ends of teaching are knowledge, power and skill. To secure these ends in public health administration obviously necessitates much more adequate teaching facilities and teaching methods of a much higher standard than those available to the earnest and conscientious student at the present time.

THE PROPER PLACE OF A FEDERAL HEALTH ADMINISTRATION IN THE FEDERAL GOVERNMENT

The proper official status of a Federal Health Administration would not seem to be a position in the Cabinet, but rather as an entirely independent Federal department, responsible directly to the President. Every position in the Cabinet is primarily political in its nature and for purposes of administrative guidance and control under our form of

* On the occasion of the Panama-Pacific Exposition, San Francisco, 1915, The Prudential Insurance Company of America made an exhibit of mortality facts, presented by a large number of charts, descriptive in part of the Geographical and Race Pathology of the Western Hemisphere. The exhibit has since been made a permanent one, together with other charts of mortality tendencies from particular diseases, the relation of height and weight to the mortality from specified causes, the influence of family history, etc., at The Prudential's Home Office, No. 9 Bank Street, Newark, N. J. Descriptive publications are available on request.

government and responsibility on a partisan basis. The introduction of politics into a Federal Health Administration would be lamentable and lead in the end with practical certainty to the defeat of even the best conceived measures of reform. The remarkable success of the U. S. Public Health Service has its origin in the fact that throughout its entire history of more than a hundred years, first as the Marine Hospital Service and subsequently as the U. S. Public Health Service, the organization, broadly speaking, has been kept entirely out of politics. If it has been found practically feasible to administer and control the interstate railways through the Interstate Commerce Commission, directly responsible only to the President, it should not be difficult to bring about a corresponding organization on the part of a Federal Health Administration concerned exclusively with the public welfare and with nothing else. By a mere accident of early circumstances the Marine Hospital Service was placed in the Treasury Department, but it should require no argument to sustain the point of view that the enormous interests involved in an effective public health administration even through the U. S. Public Health Service as at present organized can not be adequately met by a Cabinet officer concerned primarily and chiefly with questions of public finance. It is, therefore, to be hoped that in the event of a complete reorganization of all Federal health agencies the new organization will be placed on the basis of a separate administrative function directly responsible only to Congress and the President.

THE DUTY OF THE NATION IN RELATION TO HEALTH AND PHYSICAL WELL-BEING

In the inspiring words of the late William Edward Hartpole Lecky,

"To raise the level of national health is one of the surest ways of raising the level of national happiness, and in estimating the value of different pleasures, many which, considered in themselves, might appear to rank low upon the scale, will rank high, if in addition to the immediate and transient enjoyment they procure, they contribute to form a strong and healthy body. No branch of legislation is more really valuable than that which is occupied with the health of the people, whether it takes the form of encouraging the means by which remedies may be discovered and diffused, or of extirpating by combined efforts particular diseases, or of securing that the mass of labor in the community should, as far as possible, be carried on under sound sanitary conditions."

The achievement of this ideal demands a decidedly more effective health administration, attainable only, however, upon new and broader

conceptions, scientific as well as practical, than those which underlie our Federal and State health organizations of to-day.

The foregoing observations and conclusions are briefly restated in the following recommendations for a plan of action urgently called for by the highest considerations of national and State welfare.

First. The President of the United States should be prevailed upon to appoint a select committee of experts on sanitation and public health to prepare a plan for a Federal Health Administration inclusive of all the health interests and health promoting activities of the Government, to replace the existing Public Health Service, the inadequacy and restricted function of which are clearly recognized by all who are thoroughly familiar with the facts.

Second. The committee should have power to associate with itself in an advisory capacity experts recommended by national health organizations and health promoting activities directly interested in and thoroughly familiar with the facts and considerations involved in the proposed plan of a Federal Health Administration.

Third. A sufficient appropriation should be made available to the committee for general expenses and the technical inquiries called for in its judgment in the furtherance of its plans. The members of the committee, however, should serve without compensation, but they should be reimbursed for their traveling and secretarial expenses.

Fourth. The work of the committee should in broad outlines be subject to instructions from the President prepared by the Surgeon-General of the U. S. Public Health Service, the Surgeon-General of the Army and the Surgeon-General of the Navy, separately or jointly, as the President may deem advisable. The committee, however, should also from the outset act in thorough coöperation with the American Public Health Association, the National Conference of State and Territorial Boards of Health, the American Medical Association, and all other health promoting public activities willing to assist by expert counsel in the working out of the details of the proposed plan of a Federal Health Administration.

Fifth. Aside from the general instructions concerned chiefly with questions and problems of an administrative nature, the committee should concern itself with the practical feasibility of the inclusion in a new plan of Federal Health Administration of (a) the systematic physical examination and medical supervision of children and young persons below the age of majority, (b) the systematic collection, tabulation and analysis of the sickness data derived from general medical practice and institutional experience, (c) the establishment of

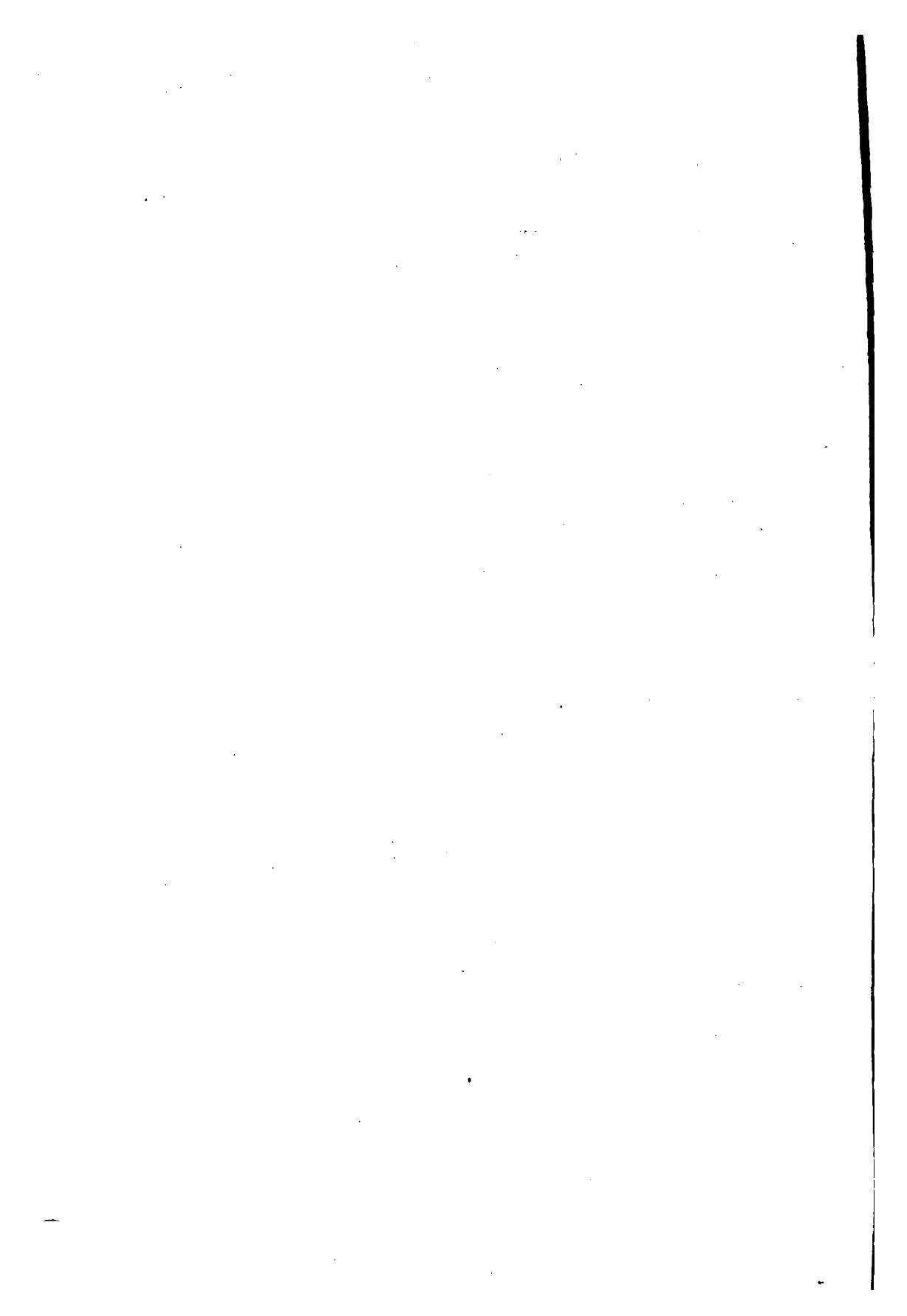
a limited or restricted State Medical Service, free from every taint of poor-relief or the recognized disadvantages of poor-law administration. The inclusion of the foregoing three principles would necessarily be largely limited to a reorganized system of State Health Administration based in all essentials upon a model Federal law.*

Sixth. The committee should inquire into and report upon the extremely important question of adequate Federal financial aid in support of local sanitary activities possibly inclusive of associated health promoting activities more or less in conformity to the basic principles of the States Relations Service applicable to agricultural education, interstate highway construction, etc.

Seventh. The committee should report upon the more or less involved legal aspects of the proposed Federal Health Administration and the implied possibilities of conflict of Federal and State authorities. In the event that the committee should deem it necessary it should be at liberty to recommend the adoption of a Constitutional amendment under which the required powers in matters of health and physical welfare would be granted to the Federal Government, possibly to be concurrently exercised under both Federal and State jurisdiction.

Eighth. If approved by the President the recommendations of the committee, with their report and exhibits, should be transmitted to the Senate Committee on Health and National Quarantine for the purpose of a public hearing and a full opportunity for a public consideration of every question involved in a measure than which no legislation of recent times is more likely to affect so vitally the present and future welfare of the American people.

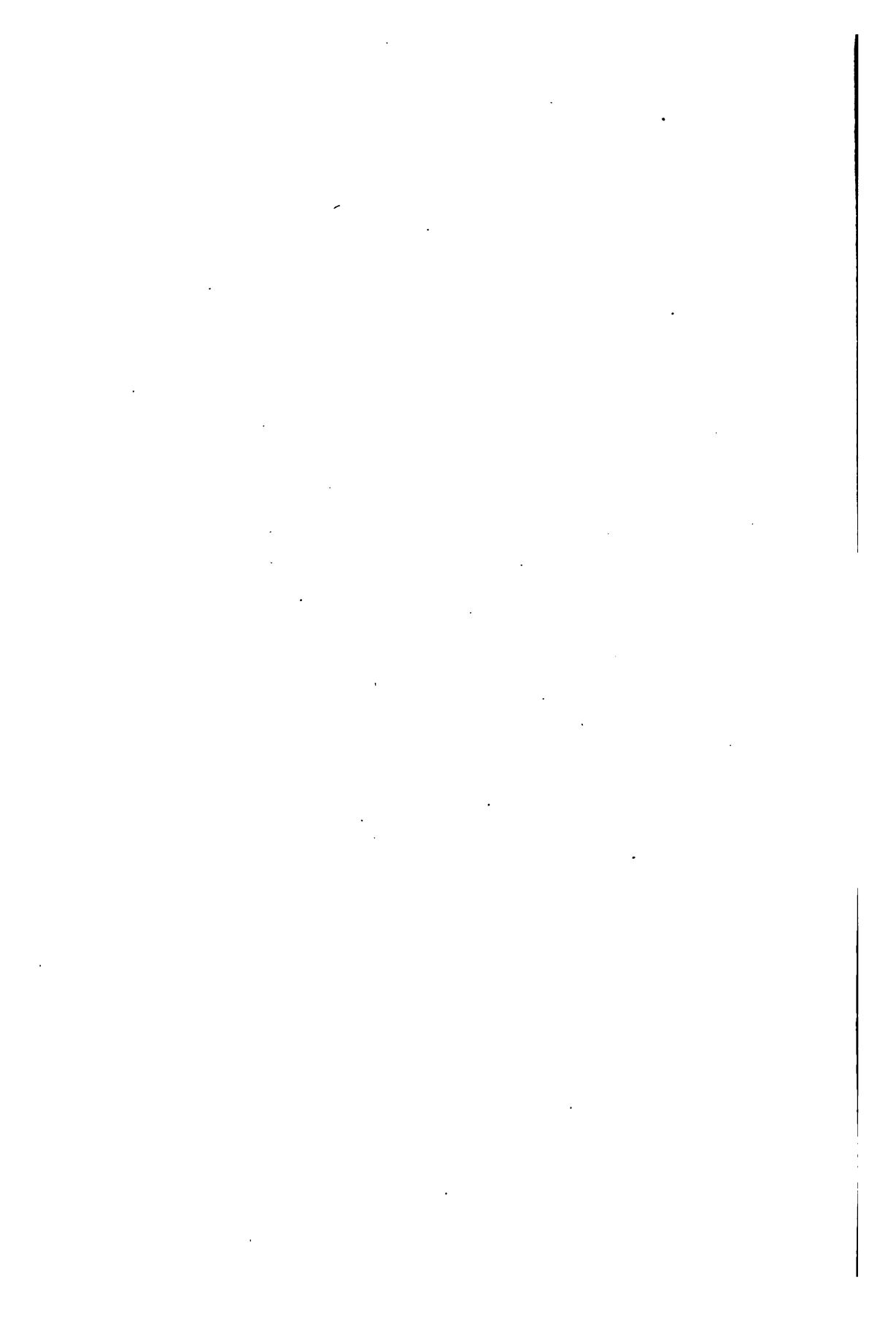
*Of special value in this connection is the plan of organization of the U. S. Public Health Service, issued in 1915. The plan is slightly out of date, but useful for the purpose of emphasizing the numerous functions and subdivisions of the service as carried on at the present time. Of exceptional importance for the present purpose are "Some Notes on Medical Education in England," by Sir George Newman, Chief Medical Officer of the Board of Education and Medical Assessor of the Universities Branch of the Board, issued as a Parliamentary Paper in 1918. This publication emphasizes the functions of the medical practitioner and the changed conditions of medical practice. It contains a discussion in detail of the modern requirements in medical education and concludes with observations on preventive medicine, the place of research in medical schools and the study of medicine after graduation. Particularly suggestive is the statement that "both the science and art of medicine suffer from the embarrassment of ever growing and expanding themes, and of the infinite number and variety of idiosyncrasies, hereditaries, and circumstances governing health and disease in the individual."



APPENDIX A

Standard form for Physical and Medical Examinations Recommended by the Committee on Race in Relation to Disease of the National Research Council

| PERSONAL NAME | | HOME ADDRESS | | COUNTRY | |
|--|--|-------------------------------|---------------------------------|--------------------------------------|---|
| AGE | Single Married | Widowed Divorced | Usual Occupa- tion | Protestant Other | Catholic Jew |
| BIRTHPLACE of applicant of his father of his mother | | TOWN OR VILLAGE | | PROVINCE OR STATE | |
| RACE | White | Negro: Mulatto | Near White | Chinese Japanese | Other NATIVE TONGUE OF MOTHER |
| PHYSICAL | Weight: Nude Clothed | Height: Standing Ibs. | Arm Span cm. | Indian: Full Blood Mixed Blood | Chest: Full Inspiration cm. Full Expiration cm. |
| Foot Length, L: | Flat Yes Feet No | Hand L Grip R | Missing Hand: Parts | Leg L R | Fingers: Eye: L R |
| | | | | | Totally Blind |
| | | | | | Absent |
| Eye Color: | Blue — Blue with yellow spots Blue with brown spots | L. Brown D. Brown | Hair Color: Flaxen | L. Brown D. Brown | Bright Red Brown Red |
| MEDICAL | Pulse (Standing) | Vaccina- Yes tion Scars No | Hearing L R | Vision L R | Normal Very hairy |
| | | | | Color Sense Red Blue | Green |
| Nasopharynx | Goitre ? | | | | |
| Lungs | Tuberculosis ? | | | | |
| Heart and Blood Vessels | Varicose Veins ? | | | | |
| Abdomen | Hernia ? | | | | |
| Genito-Urinary System | Hemorrhoids ? | | | | |
| Nervous System | Spinal Curvature ? | | | | |
| Any serious disease? | Any serious operation? If so, when? | | | | |
| Muscular Development | Very Strong | Normal | Teeth X Missing O Decayed | Upper Lower | Why? 8 7 6 5 4 3 2 1 — 1 2 3 4 5 6 7 8 Number 8 7 6 5 4 3 2 1 — 1 2 3 4 5 6 7 8 Date of Exam. |



APPENDIX B

THE USE OF NATIONAL PARKS AND HEALING WATERS FOR HEALTH AND RECREATIONAL PURPOSES

As yet only a beginning has been made in the use of national parks for health and recreational purposes. With few exceptions, the Federal Government has taken no active interest in the development of the medicinal springs of this country and the conservation of the country adjacent thereto. The sciences of climatotherapy and balneotherapy, which have been developed to so high a degree of perfection in England and on the Continent, can hardly be said as yet to exist in this country. There is an abundance of descriptive accounts of mineral waters, health resorts (spas) for Europe, Egypt and other countries of the world, but though the United States abounds in mineral springs of great therapeutic and other value, the literature on the subject is fragmentary and largely unsatisfactory. A treatise on "Climatology, Health Resorts and Mineral Springs" by F. Parks Weber, included in Cohen's "System of Physiologic Therapeutics," is, in the main, concerned almost exclusively with European and other foreign localities. As a notable exception to our general neglect of this important subject, reference may be made to a report on the mineral springs of California by Gerald A. Waring, issued by the U. S. Geological Survey in 1915. It should, therefore, not be impracticable for the survey to make the facts of an exceedingly important branch of medicine more generally accessible than is at present the case.

The most encouraging evidence of progress in the direction of a broad-minded public interest in the proper utilization of natural parks and medicinal springs for health and recreative purposes is to be found in the acquisition of the Saratoga Springs Reservation by the State of New York in the year 1909. This reservation includes four hundred acres of land, one hundred and forty mineral springs, with a daily flow of one hundred thousand gallons, which, if properly utilized, would, it is estimated, yield to the State an annual income of \$730,000 and a net profit of nearly \$550,000. The reservation maintains in operation three bath-houses, but no statistics are available as regards attendance, etc. The springs are under medical supervision,

and while the scientific control and management of the property do not conform to European standards, the tendency at least may be said to be in that direction. The Saratoga waters are of particular value in gastro-intestinal disorders, gout, rheumatism, arthritis, anemia and obesity. The mineral springs supplying drinking-waters are included in four principal classes: laxative or cathartic waters, alkaline-saline waters (with alkalinity comparatively predominating), chalybeate (or iron) waters, and table-waters. All are naturally and highly carbonated as they flow from the springs. It is pointed out in an official report on the springs that

Saratoga holds no cure-all. But for certain diseases and for certain functional disturbances fostered by the pace of our modern, high-pressure civilization, its springs do indeed run with an elixir of life, and hold as much of the power of rejuvenation as any fountain of youth yet discovered. In their more extensive development no false or extravagant claims must be made for them. They need no such exploitation. But in a thoroughly broad-minded and ethical spirit the boons that they offer must be made increasingly available to the entire public in their pure and unchanged natural condition.

The most thoroughly developed mineral springs under the control of the United States Government are those of the Hot Springs of Arkansas, regarding which annual reports have been made public for a number of years. The Hot Springs Reservation during the fiscal year 1916 provided 544,371 paid baths in the general bath-houses, providing an income of \$243,568. In addition to the number of paid baths, 2,243 complimentary baths were provided in the pay bath-houses, and 103,398 baths at the Government free bath-house, including others, a total of 654,296 baths in the fiscal year. The reservation was acquired by the Government in 1832 and has an area of 911 acres, consisting of five units, namely, Hot Springs, North, West and Sugar Loaf Mountains and Wittington Lake Reserve Park. Hot waters, however, issue only from the west slope and from Hot Springs Mountain, with an average daily flow of 848,000 gallons and an average temperature of 135° F., and are confined within an area of approximately 500 by 1,400 ft. Admirable reports, including scientific observations of much value, are published annually regarding the reservation, including with others observations on the radio-activity of the waters, the Oertel system of mountain-climbing, etc. A scientific report on the analysis of the waters of the Hot Springs Reservation, including a geological sketch by Walter H. Weed, was published by the U. S. Geological Survey in 1902.

There are, therefore, two leading precedents for the broadening of Government activity in this most important field of modern medi-

cine. The Arkansas Hot Springs Reservation, on the part of the Federal Government, and the Saratoga Springs Reservation, on the part of the State of New York, are the most conspicuous illustrations of what may be achieved at moderate expense under proper Government control and supervision. Conversely, these two illustrations emphasize the conspicuous neglect of the Government of countless other opportunities for the development of our mineral springs, which nowhere perhaps are more urgently in need of an active State and Federal interest than in California. It is not, however, merely in the direction of the proper use of mineral springs that the Federal Government can materially assist the cause of public health advancement, both individually and collectively considered. No country in the world has gone further in the acquisition of national parks than the United States, and during recent years special efforts have been made on the part of the Government to increase the public utility of these parks and playgrounds, in the direction of making them more accessible to the large majority of the public. It is becoming recognized to an increasing extent that the use of these parks for health and recreational purposes far exceeds their value to the nation as mere attractions from an artistic or scenic point of view.

Properly considered, our national parks could be made to render most important services in the furtherance of the cause of national health. They are an immense asset to the nation and should be preserved unimpaired for future generations. By liberalizing the rules and regulations concerning these parks and by providing at moderate cost for food and shelter, the Government could at an inconsiderable expense render material assistance to the cause of good health, as emphasized in life and activity out-of-doors. Every practical feature of broadening the functions of national parks to public health purposes is emphasized in the Proceedings of the National Parks Conferences, of which five or six have thus far been held. It is sincerely to be hoped, however, that in the future questions of health will receive more consideration than heretofore, although in the nature of the subject, the recreational features of the use of the parks, etc., are rightfully entitled to priority.

The importance of rest and recreation is being better appreciated at the present time, although even as yet the necessity of periodical and prolonged vacations is hardly admitted on the part of the mass of our wage-earning population. The time, however, cannot be far distant when wage-earners will be given vacations in precisely the same manner as is now the case almost invariably with those that are paid on a salary basis. The utilization of leisure time for health promoting

purposes will in the future become a matter of profound interest and national importance. The development of such agencies as the Boy Scout movement, etc., must necessarily tend largely in the direction of encouraging out-door sports and out-door activities. The time has passed when the Government could view these matters with indifference; quite to the contrary, the duty is now recognized for an active Government interest, as best illustrated in the proper use of national parks, playgrounds, etc., as well as mineral springs. The possibilities for Government action in these directions have not as yet been realized, except in a very moderate degree. The future, however, is full of promise, providing an active educational campaign succeeds in keeping the facts before the public. There can be no question but that the neglect of the proper use of mineral springs is one of the most lamentable evidences of apathy in the larger field of preventive medicine or medicine as a healing art.

APPENDIX C

AN OPEN LETTER TO THE AMERICAN RED CROSS ON SYSTEMATIC FINANCIAL AID IN SUPPORT OF SELECTED NATIONAL HEALTH PROMOTING ACTIVITIES

April 8, 1919.

Mr. Henry P. Davison,
The American Red Cross,
National Headquarters,
Washington, D. C.

My dear Mr. Davison:

It has been suggested to me that I communicate to you the following observations concerning the possible future activities of the American Red Cross, with special reference to the financial support of national health promoting agencies. The observations are in a large measure based upon my rather extended experience with boards of directors and executive committees of such national organizations as the National Tuberculosis Association, the American Society for the Control of Cancer, the National Safety Council, the National Committee on Malaria, etc. I have, however, also briefly discussed some of the details involved with Mr. W. Frank Persons, formerly Director-General of the Department of Civilian Relief, Dr. Henry W. Cook, formerly in charge of the Bureau of General Medical Service, Mr. Curtis E. Lakeman and others thoroughly familiar with the broader plans and purposes of the American Red Cross in its particular relation to the subject-matter under consideration.

At the outset, it may be laid down as a fundamental principle that it would be most regrettable if the general membership of the American Red Cross were permitted to lapse in a large number of cases because of an apparent non-necessity to continue such membership on a universal scale. I am strongly of the opinion that the principle of universal membership in the American Red Cross should not be abandoned because of the termination of the war, but that, quite to the contrary, the view should gain ground that the future effectiveness of the

American Red Cross in any national or international emergency must in a large measure depend upon the principle of universal membership.

I, therefore, believe that the one-dollar payment for such membership should be continued and that the annual campaign for membership should proceed more or less in conformity to the methods which have been found satisfactory in the past.

The question which first arises is, of course, as to the best advantage which could be made of the *Red Cross dollar*, as the payment might become known by its future universality and practical perpetuity. Let the American Red Cross assume the responsibility to serve in the future in a substantial measure as the collecting agency for funds required for the maintenance and support of selected national health promoting agencies and let the fundamental principle in the distribution of funds be similar to the action which underlies the present (1919) relation of the American Red Cross to the National Tuberculosis Association. It seems to me that this arrangement is wholly admirable and thoroughly effective in providing for the financial needs of national associations, without the friction of unnecessary duplication in money-collecting devices, even though through satisfactory methods, such as the sale of Red Cross Christmas seals, etc.

It might be suggested that the American Red Cross should first deduct twenty-five per cent. of all the money collected on the basis of universal membership for its own administration and the accumulation of a reserve fund. On the basis of, say, a standard twenty-million membership, this method alone would yield to the American Red Cross for its own immediate purposes and solely in behalf of the Red Cross dollar membership an annual income of not less than five million dollars.

A second twenty-five per cent. of the original funds collected might be assigned to local chapters for local educational relief and emergency work. Some such distribution would be necessary to retain an active local interest on the part of the membership, thoroughly well aware of the fact that its local pecuniary needs would be provided for by the American Red Cross.

The remaining fifty per cent. of the total income derived from the Red Cross dollar membership might be considered a separate and distinct fund, available exclusively for the needs of approved national health promoting agencies. If, for illustration, ten per cent. of the total amount raised through the Red Cross dollar membership fee were assigned to the National Tuberculosis Association, more than two million dollars would be made available for the needs of that association, or, more accurately, for the needs of State and local associations.

for purposes of prevention and relief. In much the same manner of the remaining forty per cent., or forty cents, of the Red Cross dollar, it might be feasible to assign, upon careful investigation, a proportion of ten per cent. of the total funds to the needs of the National Committee on Child Hygiene, while as much as five per cent. might be made available to the American Society for the Control of Cancer, the National Committee on Malaria, and similar organizations, now more or less inadequately financed, though apparently urgently in need of a larger measure of financial support.

As a safeguard for its own protection, as well as a desirable innovation, the American Red Cross should insist upon a preliminary budget, subsequently to be followed by an annual audit and the revision of such budgets in matters of detail, to the entire satisfaction of the American Red Cross. Such a method of financial accounting would strongly tend to standardize methods and eliminate duplication of effort and also bring about a reduction of expenses in many important directions. By this means the American Red Cross would secure a veto power over possibly useless national activities, and it may safely be assumed that the organization could be relied upon to exercise its powers in an absolutely impartial and otherwise thoroughly trustworthy manner. Some years ago a Committee of Fifteen was appointed to bring about the coördination of health promoting activities, but the practical difficulty then experienced was the conflict of interests, more or less personal, which would be eliminated if the major portion of the funds required for such activities were collected and distributed hereafter under proper supervision through the agency of the American Red Cross. It has been said that there are some fifty-seven national health promoting agencies, but many of these are not truly national in plan and scope, and probably fifteen or twenty of such associations or agencies would constitute the major portion of activities deserving of special consideration. By acting for these organizations or agencies in the collection of funds through a national and universal dollar membership, the American Red Cross would make all of these activities truly national in plan and scope and make each and every member fully aware of the importance of active coöperation with local health activities in the furtherance of local health promoting plans and purposes.

There is naturally much public anxiety as regards the future of the American Red Cross, which, having rendered such extraordinary services during the war, it would seem most regrettable to have in a large measure eliminated from the sphere of our future national activities. It is strongly felt that the American Red Cross could become

extremely useful in connection with public health efforts, whether Federal or local, provided the Red Cross refrains absolutely from entering on its own account this most difficult and rather involved field of public, private, philanthropic and governmental service. By acting, broadly speaking, as the financial agent for selected national health promoting activities, every serious difficulty would be overcome and the American Red Cross would be made an integral part of all essential efforts tending to promote national health and well-being.

Essentially an emergency relief organization, the primary function of the American Red Cross should not in the least be confused with national services not in the nature of relief, but rather of a health and welfare promoting character. The relief work of the organization has always been largely, and properly so, in the nature of a nursing service, either during war or during other extraordinary emergencies, and it would seem of the utmost practical importance that this function should be most thoroughly conserved and as far as possible enlarged upon. The Home Nursing Service, so splendidly organized and developed during the war, has neither been fully utilized for war or after-war purposes, not even during the epidemic of influenza-pneumonia. Thousands of women who passed their examinations and who were honored with certificates of efficiency have found themselves practically forgotten and not used in national emergencies for which they seemed particularly qualified. There could be no more valuable effort on the part of the American Red Cross than to establish what would practically be equivalent to a *home nursing service*, consisting of women thoroughly trained under the direction of the American Red Cross. For there is the most urgent need throughout the country for a home nursing service on a voluntary basis, occasionally perhaps supplemented by services rendered on the basis of a moderate compensation. Such an emergency home nursing service should be available to the nation in the case of great epidemics, such as those of infantile paralysis, influenza-pneumonia, etc., or in the event of national emergencies, such as floods, earthquakes, etc. The qualified training which the American Red Cross has given to its graduates in home nursing has unquestionably been the means of saving countless lives and of promoting the comfort of countless patients in the home, of whom there will never be a record. If such a home nursing service, therefore, were made the primary basis of an appeal for annual membership, supplemented by the explanation that every such member would also be giving furtherance to approved national health promoting activities, the dollar universal membership would assume a much higher dignity and secure a more pronounced

social status in the eyes of the public than is probably at present the case, and the perpetual continuance of such membership would become practically a national duty on the part of every man, woman and child enlisted in the good work of the American Red Cross.

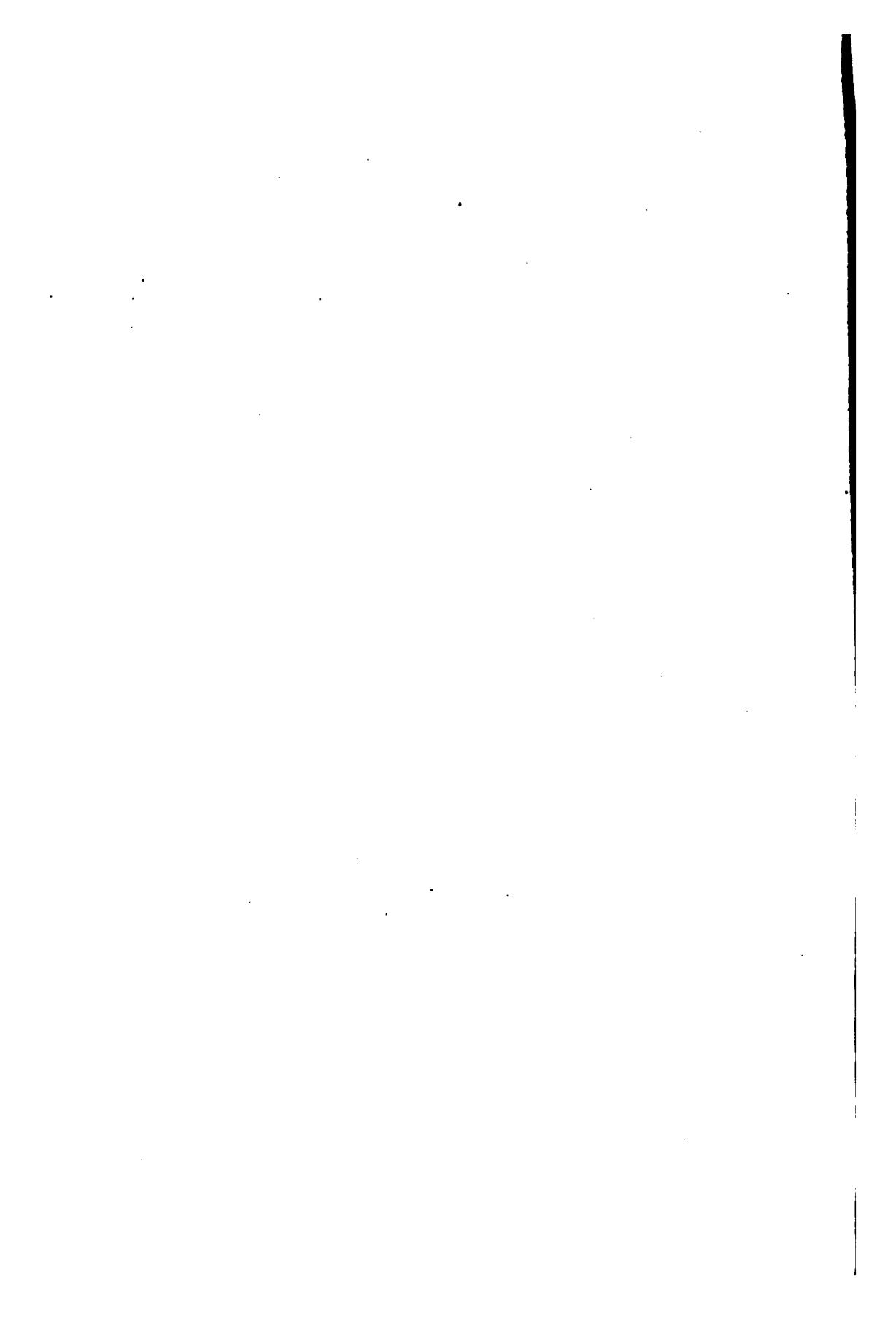
The fact is not overlooked, of course, that the American Red Cross fulfills many other functions than the one herein briefly referred to, such, for illustration, as training in qualified first aid to the injured, which might well be more emphasized than has actually been the case. Such instruction should be made practically universal in the future and made available to all willing to qualify. It has been the experience of the National Safety Council that the introduction of first-aid teaching in industry is much facilitated by the preliminary training given by the American Red Cross. Quite similar has been the experience of the U. S. Bureau of Mines. It is, therefore, to be hoped that there may be the fullest coöperation between the American Red Cross and the National Safety Council in behalf of the extension of first-aid teaching to schools and colleges, in the furtherance of the cause of safety first.

Restating the foregoing observations, it would seem to me that if the appeal for an annual one-dollar membership in the American Red Cross were made to rest primarily upon the services rendered by that organization in the development of home nursing and first aid to the injured, amplified by the suggestion that such membership would carry with it the support of approved national health promoting activities, the work of which would practically be familiar to one and all, the value of the membership would be more thoroughly realized on the part of the general public and form in course of time the background of American philanthropy, as visualized to every man, woman and child by the broader activities of the American Red Cross.

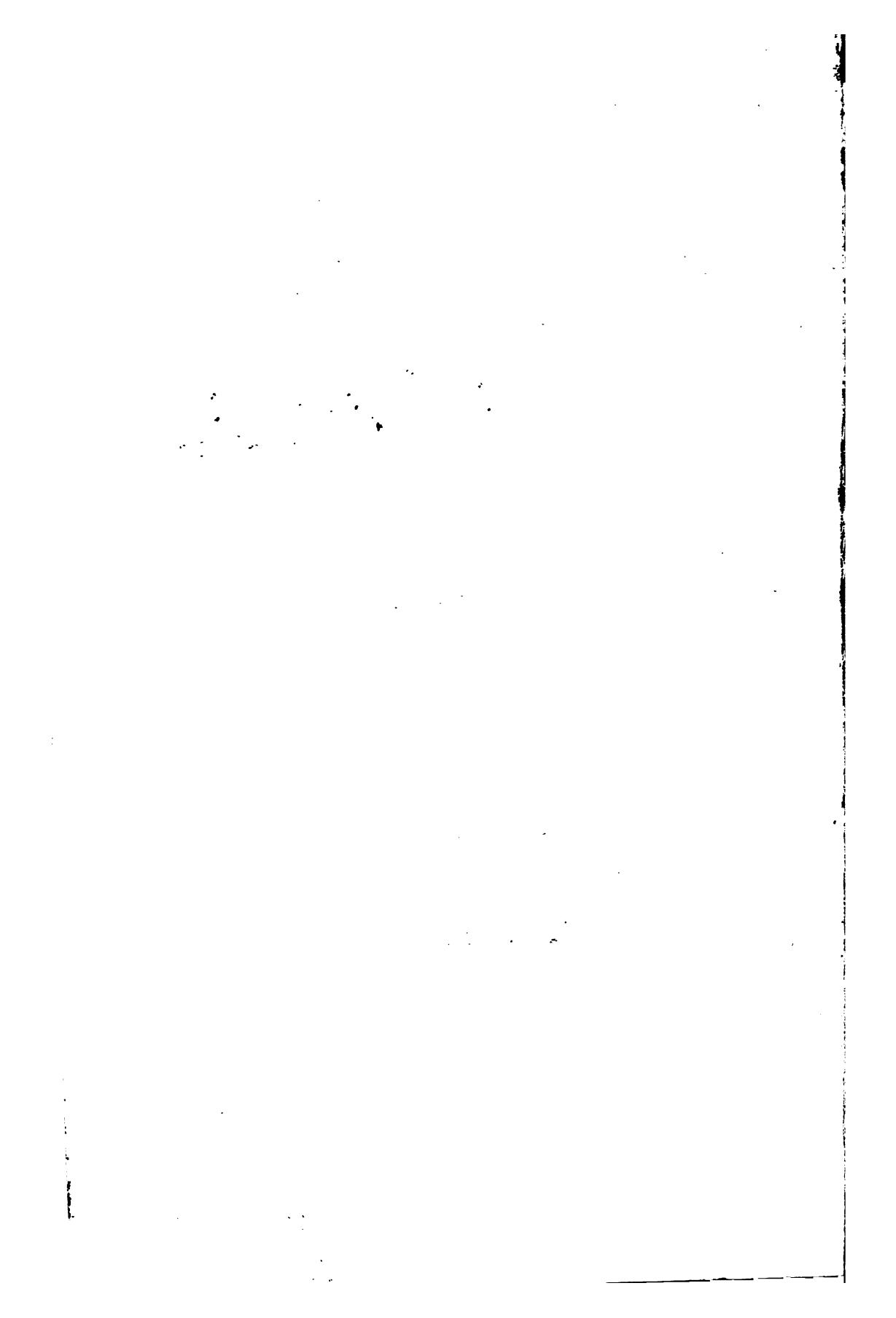
Very truly yours,

A handwritten signature in black ink, appearing to read "Frederick L. Hoffman". The signature is fluid and cursive, with a long horizontal line underneath it.

Third Vice-President and Statistician.







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